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Farm Outlook Brighter

BY G. L. LACHER,
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FARM equipment makers have a huge backlog of prospective orders. Farmers are more than a year behind in their purchases of agricultural machinery. Hog farmers are now operating on a profitable basis. Only a slight increase in meat consumption would put the entire live stock industry on a prosperous plane. Agriculture has a smaller capital indebtedness than most other major industries.

CHICAGO, August 13.

IS agriculture leading us out of the depression? This question has been on many lips ever since the spectacular rise in hog prices, which was followed by advances in cattle, cotton, wheat and other products of the soil. New interest has been aroused in facts and figures relating to farm prices and farm output. Crop reports are being scanned, surplus statistics are being studied, and the time-worn bugaboo, overproduction, is being dragged into the light for more critical examination. In a word, the question mark is being put to all angles of the situation in an effort to ascertain whether the current upturn in farm products is motivated by fundamental factors or merely represents a speculative flurry.

Needless to say, the city of Chicago, the great focal point of Western agriculture, takes a hopeful view of the outcome of recent developments. But its attitude is nevertheless a cautious one, as might be expected after repeated false starts toward recovery in a prolonged depression of unusual severity. Farm equipment manufacturers, whose business has been uniformly poor ever since April, 1930, have not yet seen any marked sign of increased interest in their products. Makers of wire goods have noted a slight gain in orders from agricultural sections, but this increase reflects anticipatory purchases by distributers rather than an actual expansion of buying by the farmers themselves.

Perhaps the skepticism of Chicago regarding agricultural price advances is shared by the farmers. They are probably waiting to see what the future brings forth. While the statistical position of major crops in this territory seems to be favorable, it is feared that world-wide uncertainties, both economic and political, may alter the indicated course of events.

External forces are given such heed because farmers, as well as the industries directly dependent on them, believe that their present plight is due primarily to conditions originating outside, rather than inside, agriculture. Burdensome crop surpluses, they contend came into being, not because of overproduction, but rather because of enforced curtailment of consumption. Over a period of years, their claim is, farm output has barely kept pace with the increase in population. They cite an index of per capita production of crops in this country from 1890 to 1930 (Bulletin No. 69 on Farm Economies of the New York State College of Agriculture, Ithaca, N. Y.) which shows only minor variations from the base (1910-1914 = 100). In fact, during the entire decade, 1921 to 1930, per capita production was below the base.

Why Wheat Is Overproduced

It is conceded, of course, that overproduction may exist in certain individual farm commodities, such as wheat. But wheat output is excessive, not because it has increased, but because foreign demand has declined. European nations have erected tariff walls which have raised prices within their boundaries to as high as $1 and $1.50 a bushel, with the result that consumption has been discouraged. Likewise newer wheat growing countries like Canada and Argentina have greatly expanded their production and are competing more and more aggressively for the custom of importing nations.

United States Government reports clearly show that American wheat output has not increased. For the past 19 years the annual yield has fallen between relatively close limits. The largest recent total was 1928, when 914.000,000 bu. was produced, but even this figure was considerably behind the 1915 yield of more than a billion bushels. Production last year was also rather large—892,000,000 bu., comparing with 858,000,000 bu. in 1930 and 812,000,000 bu. in 1929. The indicated crop for 1932, according to the last estimate of the Depart-

ment of Agriculture, is 723,000,000 bu. This unusually low total undoubtedly explains the more bullish complexion of the wheat market. Domestic consumption for the year will range from 600,000,000 to 650,000,000 bu. and the carryover from last year amounts to 360,000,000 bu. Exports, if no larger than a year ago, when they totaled 136,000,000 bu., will reduce the surplus.

But exports may show an increase. Plantings in 23 wheat raising countries of the northern hemisphere, exclusive of Russia and China, showed a decline of 200,000,000 acres from 1931, and recent reports from the Soviet indicate that it may soon be a buyer rather than a seller of the grain. The wheat outlook for this year, therefore, is regarded as favorable, although as a long-term policy a lowering of production toward the level of domestic requirements is believed to be necessary to protect growers from the wide fluctuations inescapable in a world market.

A Favorable Situation in Hogs and Corn

Dependence on foreign trade is not a factor in live stock or corn. Corn, in fact, is no longer an important cash crop, since most growers feed it on the farm. According to the Government's computations 12¼ bu. of corn fed to pigs is converted into 100 lb. of pork. The cost of growing corn on representative Illinois farms (taking account of all overhead except the use of land and taxes) averages 21c. a bushel. This means a cost of $2.57 for 100 lb. of pork. With hog prices now ranging from $4 to $4.50 per 100 lb. on the farm, pork raisers are netting a handsome profit.

The recent advance in hogs is traced to a decline in production. The spring pig crop was 7 per cent lower than in 1931. About 3 points of this loss was attributable to a reduction in breeding, while the remainder was due to a heavy death toll during the unusually severe weather that gripped the Middle West early this year.

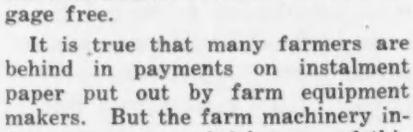
Cooperative Distribution Favored

The outlook for all forms of livestock is brighter. Only a small increase in meat consumption, it is said, would bring such a favorable readjustment of demand to supply as to put the entire livestock industry on a prosperous basis. It is realized, of course, that such a development might result in overstimulation of production, and it is for that reason that the farm equipment industry and others dependent on agriculture are sympathetic with the purposes of the Agricultural Marketing Act. Farmers have excelled in production efficiency, but they have been woefully weak in distribution. Cooperative organizations for marketing are essential, it is said, to insure orderly and intelligent selling. These associations are able to control the flow of products so that periodic flooding of the market with disastrous results to prices is largely avoided. For example, the lemon growers of California ship only the amount of lemons that the market can comfortably take and convert the remainder into various extracts. Cooperative distribution, moreover, naturally leads to intelligent control of production. Knowledge of market limitations prevents blind expansion of output where it is not needed.

Farm Debt Burden Exaggerated

Of course, the perfection of cooperative marketing machinery will take time and current interest is in immediate prospects of improved farmer buying of implements, wire fencing and other manufactured products. The statement is frequently made that farmers are so deeply in debt that it will take a long time for them to reach a position where they can think about commodity purchases. Farm indebtedness is indeed a serious problem, but it has been exaggerated. In this connection it should be recalled that agriculture took its deflation in the depression of 1921 and that it experienced no secondary inflation in the late 20's. The farm realty mortgage debt of the country is only about 22 per cent of present values and it would be difficult to discover any other major industry with such a low capital indebtedness. Moreover, more than half of the tilled land of the United States and more than half of the total number of farmers are mortgage free.

It is true that many farmers are behind in payments on instalment paper put out by farm equipment makers. But the farm machinery industry is not worried because of this fact. It has had many years of experience with instalment selling and is not alarmed because farmers find it necessary to take three falls instead of two falls to complete payments on their purchases. Moreover, it is believed that cash resources of farmers are much larger than is popularly supposed. Farmers with money have deferred purchases for the same reason that their city brothers have. If prices of agricultural products should continue to move upward, they would doubtless let go of funds which they have been holding for emergencies. Certain it is that a huge backlog of postponed purchases has accumulated. Careful estimates by the National Association of Farm Equipment Manufacturers indicate that the farmers are more than a year behind in their orders for agricultual machinery.



The Horse Is Not Coming Back

Decreasing values have not altered the farmer's belief in mechanization. It is true that the temporary shift of people from the city to the country has caused a slight increase in the use of horses, but this apparent preference for the horse has been due to lack of capital and limited operations. The tractor and tractor-drawn equipment have come to stay. Even at present low prices of feed, the cost of purchasing and maintaining a tractor is 28 per cent lower than buying and keeping horses that would do an equivalent amount of work, according to computations by the farm equipment association.

Aside from the actual money saving, there is a large economy of labor and time. A tractor requires only one operator, while an equivalent number of horses will require several drivers (in the case of the so-called all-purpose tractor equivalent to eight horses, one operator would replace two to four drivers). Horses require care every day of the year, whether they are being used or not, whereas the tractor demands no attention except when in operation and once or twice a year when it is overhauled. The chore time for eight horses totals 528 hr. a year, according to estimates by the farm equipment association, while the chores in connection with an all-purpose tractor amount to only 63 hr.

In 1930 there were 920,021 tractors on American farms as compared with only 80,100 in 1918. Agricultural equipment makers are confident that the number of tractors and tractor-drawn machines will show further sharp increases in the years to come.

Progress in Iron Alloy Studies

A survey of research work that has been done in alloys of iron and molybdenum will be available in the early autumn in the shape of a monograph prepared by J. L. Gregg of the Battelle Memorial Institute. It will be the first of a series to be issued by the Iron Alloys Committee of the Engineering Foundation, 29 West Thirty-ninth Street, New York, under the project organized and financed by technical societies, research institutes and the iron and steel industry. A second monograph, on iron-silicon alloys, is likely to be published early in 1933.

Metropolitan Life Insurance Co., Policyholders Service Bureau, has issued a booklet entitled "Employees' Suggestion Systems." This has been prepared from an analysis of data covering more than 100 companies.

Deficiteer, the Industrial Murderer

By THOMAS J. FOSTER
Chairman, National Bridge Works, Long Island City, N. Y.

MR. FOSTER urges that a profit should be figured on every transaction, particularly by large corporations, which often knowingly lose money on competitive products.

He is especially concerned over a class of industrial destroyer whom he flays as a "deficiteer,"—a class that is not disturbed by powerful companies on the score that a killer of small competitors is not unwelcome.

The demand of the hour in his opinion is for fuller cooperation, particularly by large manufacturers whose independence or indifference has allowed the industrial parasites to exist. Unless there is intensive planning for profits, more salesmanship and less peddling, and business conduct within the economic as well as statutory law, we shall continue to have not merely unbridled competition but destructive competition.

The article is of the type which invites discussion, and it would be helpful to learn from many quarters if a rekindling of the cooperative effort is not now in order.

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YEARS ago we were afraid of the organization that made too much money, so we made the "profiteer" a by-word with a contemptuous implication. We have, however, stood for a worse evil for years —the "deficiteer"—one who sells at or below the cost of production (unbridled competition). His presence is felt in almost every industry except those under government control, and we must either get rid of the deficiteer or we will all be under government control.

The deficiteer is an industrial murderer, and murder in any form is antisocial. Industrial murder has today become a slaughter.

The effect of industrial murder may be shown financially as well as industrially. There are two kinds of money —cash money and credit money. Every cash dollar supports on an average about five credit dollars. When therefore an article is furnished at a loss of one cash dollar it reduces the potential volume of business by six dollars. This is the reason that inflation is resorted to in a time of depression. Profit is the only permanent and safe means of inflation. Unless forced inflation can establish a condition of profit, it will not succeed.

The deficiteer causes a vicious cycle. He sets the price and others must follow, or they can get no business. When this extends over a long enough period for the bank to see the poor results, credit is lowered or cut off. This causes merchandise to be thrown on the market to raise immediate cash. The market becomes demoralized and everyone in that line suffers a loss.

Credit to every one is then curtailed, and this continues until the market is in the hands of the strongest or until some outside influence stabilizes the market. In the meantime, to reduce losses, salaries are cut, with resultant lessening of buying power, and thus a lowered demand, so that prices must again be lowered to stimulate business, reducing more salaries, reducing the buying power and so on until the final result, if not checked, would be the loin cloth for apparel and goat's milk for food.

Industrial Slaughtering Must Be Outlawed

Industry is a necessity of life. It should be a legal as well as an economic wrong to destroy a necessity of life, and yet the deficiteer is allowed to keep at his nefarious tactics regardless of the disaster he causes industrially, financially, and socially. Many corporations are disinclined to outlaw him because they wish to kill off a smaller competitor or to grab something from one on an equal footing.

One of the worst features in our industrial life is that element that will not cooperate or make any contribution of time or money but will take advantage of the cooperation attempted by others. The dictionary calls such creatures parasites. You cannot govern the parasite except by law. He has no sense of his relationship to the community. His impelling motive is greed. He demands perfect freedom of action for himself regardless of the rights of others.

Indifference of Large Corporations

Competition was so long considered the "life of trade" that the average business man takes it as a normal condition, forgetting that there are two kinds of competition, the one fair, the other destructive. Only theoretically have we any protection against destructive competition. As long as the large corporations with their extensive influence and the parasites with their greed are opposed to a change, and the average business man clings to his ignorance and indecision, we need not expect to curb the deficiteer or the parasite. On the other hand, we cannot get back to prosperity without the profits which they make it impossible to obtain. This is not a war between two methods of operation. In the words of Justice Brandeis of the United States Supreme Court:

> "Unbridled competition has been one of the major contributing causes of the economic depression."
>
> "The people of the United States are now confronted with an emergency more serious than war."
>
> "Misery is widespread in a time, not of scarcity, but of abundance."

The fabricating industry contributed its maladjustment to the present condition by practicing "unbridled competition." This was due to an absence of planning for profits from both an organization and legal point of view, to greed, and to lack of cooperation. When a machine breaks down it cannot run again until the cause of the break is removed. The question then is, "Was unbridled competition the 'major contributing cause'?" If it was, have we started to cure the depression when we eliminate it? Can the depression ever be cured if we do not get rid of it?

To answer the first question we have only to refer to the many arti-

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Basic Open-Hearth Furnace Charges

By LEWIS B. LINDEMUTH
Chrysler Building, New York

A SYSTEM for charging open-hearth furnaces, arrived at empirically, increases tonnage and yield, eliminates that poor quality of steel resulting from "soft" heats, and furnishes a means for accurately determining the relative value of different grades of scrap.

It is a function of the steel-making department of a works to compensate for all of the variables in chemical and physical properties of the raw materials and to deliver ingots to the rolling mills, which, for any grade of steel, must be uniform in both chemical and physical features. Scrap produced in a plant and returned for remelting varies both as to composition and weight classification, while purchased scrap contains even wider variables. Iron is also subject to variation, particularly in the silicon content, which is the one variable mostly affecting the open-hearth operations. Carbon, manganese and phosphorus are not subject to variations between casts sufficiently wide to alter the steel-making procedure.

It is not feasible to classify scrap and arrange uniform proportions of the different grades for each heat. It must be charged as it is available, and the variables compensated for, so that each heat will melt according to a preconceived notion of what is best for economy, speed, quality and yield.

With a knowledge of the quantitative effects of the variables, a study of other economies often reveals that established practice, previously assumed to be the most economical, is otherwise. It also establishes a basis for lower ingot costs by indicating substitutions, as prices change, without interrupting operating procedure.

Any relationship established in one plant does not necessarily hold true for another, although in principle, the system which is here described, can be applied generally with far less investigation than was necessary in first arriving at it. Differences in furnace design, fuel, speed of melting, etc., effect the rate of oxidation, which is essentially the reason for the different effects of variable raw materials. The time element in the addition of hot metal, the maintenance of furnaces, particularly ports and checkers, and the condition of the furnace bottoms are factors effecting the working of heats, but, fortunately, in any one plant, these things are fairly uniform. It is far better to have them uniform, even though uniformly bad, than to have important conditions variable.

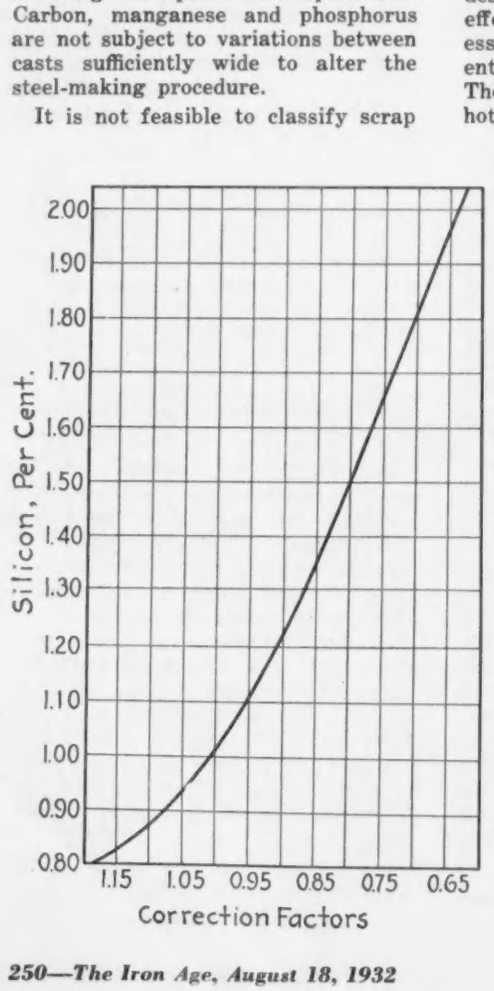
Three Different Operating Conditions

There are three distinctly different conditions under which most plants operate their open-hearth furnaces.

1. All iron charged is hot metal, but only the minimum amount necessary is used.
2. All iron charged is hot metal, but a definite percentage is used in each heat, any excess being compensated for by charging ore.
3. All iron charged as cold pig.

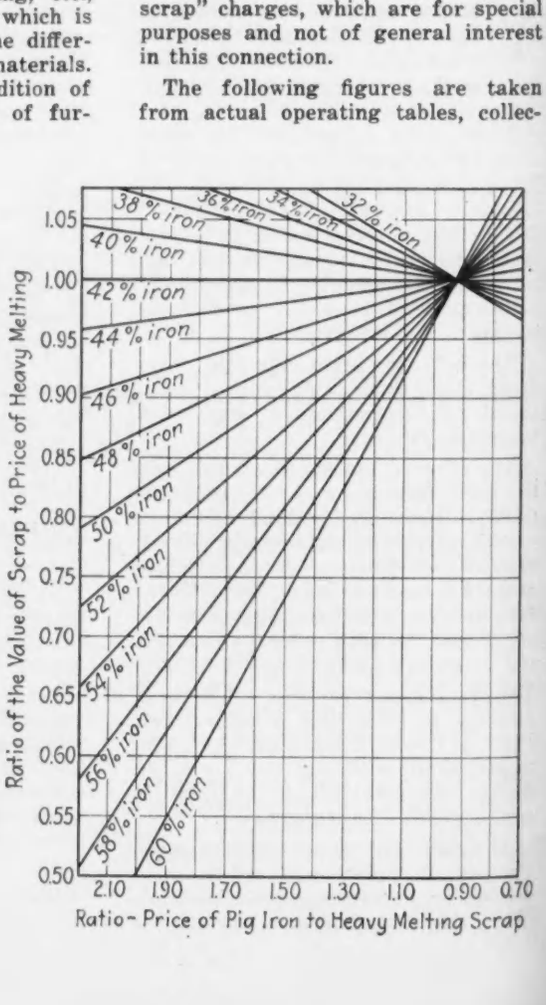
There are other processes, principally the duplex, Talbot, and "all scrap" charges, which are for special purposes and not of general interest in this connection.

The following figures are taken from actual operating tables, collec-



WHEN the pig iron analysis (at left) is something different from 1 per cent silicon, the equivalent amount of iron to be added to the scrap is ascertained from the curve; at the left is indicated the silicon content and at the bottom the multipliers to correct for the silicon.

AT the bottom of the chart (at right), locate the point which shows the ratio of the price of pig iron to that of heavy melting steel. Run up vertically to the diagonal line which corresponds to the percentage of pig iron needed in the mixture with the grade of scrap under consideration. Running to the left horizontally will then give the ratio that the price of the scrap should hold to that of heavy melting steel to warrant the use of the scrap.



tion of the data for which covered several years of trial and observation. With them as a guide, the application of a similar procedure to other plants has been a comparatively simple matter.

Heats with 2 Per Cent Ore Charge

It has been assumed that a heat, no matter how charged, should require 2 per cent of its weight in iron ore. for working, after it has melted. This 2 per cent insures a good working heat, and at the same time, on the assumption that it will be required, provides allowance for minor interruptions and irregularities beyond control. Ore in excess of this amount is preferable to the occasional adding of additional iron, both because of quality, and because iron additions generally increase the size of the heat beyond the ladle capacity, with a resulting production of scrap.

The initial procedure was to establish a relation between a known grade of scrap and hot metal containing the usual variations in silicon encountered in basic iron. Nearly a thousand heats established the relationships shown in column 4 of the table and chart No. 1. Heavy melting scrap of a known analysis required 58 per cent of this scrap and 42 per cent of iron containing 1 per cent silicon to melt it down with 2 per cent iron ore additions during working. This same group of heats also furnished sufficient information for compiling the chart indicating the corrections in the amount of iron necessary because of variations in silicon. The correction for silicon is not directly in proportion to the silicon content, but at 0.80 per cent silicon, 18 per cent more iron is required than for 1 per cent, while for 2 per cent silicon, 37 per cent less iron is necessary.

The melting characteristics of other grades of scrap were then determined similarly. Where feasible, only one grade of scrap would be charged in a heat, but when this was not possible because of bulkiness, the unknown scrap was charged with a known scrap, and its effect calculated.

Six of these classifications are shown in the table. The last column representing the 12 to 14 per cent manganese steel is included as a matter of interest, because this scrap requires only 21.9 per cent of iron containing 1 per cent silicon for a satisfactory heat.

Tables of this kind, representing all the grades of scrap which come into a plant are sufficient for those plants using the minimum of iron.

Examples for Calculating Charges

THE stock yard sends in the following steel scrap for a 240,000-lb. charge:

1—Old compressed sheets, lb.	31,500
2—Sides and ends	10,200
3—Beams and angles	33,000
4—Forging scrap	16,700
5—Rails and car wheels	42,600
6—12 per cent manganese castings	6,000
Total, lb.	140,000

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TO take out the guess in open-hearth furnace operation and to promote uniformity and dependability of product and secure best all-round economy, the author, on the basis of years of experience, has developed a rationale which he has been willing to explain for the benefit of IRON AGE readers. In a word, the article is one of the most practical contributions on the subject that the literature of steel making affords.

The tabulation of relations between the amounts of pig iron to go with different amounts of different grades of scrap has been established on the records of many heats (nearly a thousand in the case of No. 1 heavy melting scrap). A simple chart gives correcting coefficients to ascertain the amount of pig iron to be used to correct for actual variations in the silicon content of the iron as received. Then the article covers the justification for using a given grade of scrap when taking in account its price, the price of heavy melting steel and the price of pig iron.

Mr. Lindemuth contends that the question of scrap must receive more intense study both by the steel maker and the scrap collector.

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From the tables we find the requirement for 1 per cent silicon iron for each of these items:

1	47,250 lb.
2	10,200 "
3	25,100 "
4	12,660 "
5	24,860 "
6	1,700 "
Total	121,770 lb.

The analysis from the mixer iron is 1.22 per cent silicon. By referring to the chart for the silicon correction, it indicates 90 per cent of the amount calculated for 1 per cent silicon, or 109,590 lb. This would, however, give us a charge of 249,590 lb. The bundled sheets can be left out. With 1.22 per cent silicon iron, the bundled sheets require 54 per cent iron in the mixture. Therefore, with 9,590 lb. too much charge, 46 per cent of this is deducted from the sheets and 54 per cent from the iron making the charge: scrap 135,600 lb., hot metal 104,400 lb., or 43.5 per cent iron.

Starting with Definite Percentage of Iron

The next case would be that of a plant charging a definite percentage of iron in each heat, making up the excess with ore in the charge. Similar tables to those in case I must be made up with an additional table for the proportion of ore necessary to compensate for the excess of iron calculated to a basis of 1 per cent silicon. There is considerable variation in this figure between different grades of ore.

The same plant as before changes its practice to a charge of 40 per cent scrap and 60 per cent hot metal. The ore equivalent of excess iron has been found to be 40 per cent.

Stock yard delivers the following steel scrap for a 240,000-lb. charge, the iron to amount to 60 per cent, or 144,000 lb.:

1—Bundled sheets, lb.	13,000
2—Sides and ends	21,000
3—Soft bloom crops	12,000
4—Rail ends	50,000
Total, lb.	96,000

The iron requirements from the tables are:

1	19,500 lb.
2	21,000 "
3	9,200 "
4	29,200 "
Total	78,900 lb.

The mixer analysis again shows 1.22 per cent silicon, reducing the iron requirement for this scrap to 90 per cent of the 78,900 lb., or 71,010 lb. The fixed charge, however, requires 144,000 lb. of iron, or an excess of 72,890 lb. of 1.22 per cent silicon iron. This is the equivalent of 81,000 lb. of 1 per cent silicon iron, which requires 40 per cent of its weight in ore, or 32,400 lb., or 13.5 per cent of the total charge.

When the Mixer Contains 0.80 Per Cent Silicon Iron

Let us assume again that all of the above conditions are the same, except that the mixer contains iron with 0.80 per cent silicon. The iron requirements for the scrap would then be 93,100 lb., and the excess equivalent of the 1 per cent silicon would be 50,900 lb., requiring an ore charge of 20,360 lb., or 8.5 per cent of the total charge.

The third case is that of the plant charging all cold iron. This generally is limited to those companies who purchase both scrap and pig iron. In general, the use of cold iron follows the same rules as hot metal. There has never been any accurate means for establishing within sufficiently close limits the analysis of cold iron charges, and, therefore, no great accuracy in charging can be effected. Furnaces working on cold iron require 5 to 10 per cent more iron than with hot metal. Definite economic advan-

tages, however, can be gained for cold iron practice from the data which has been collected from hot metal charges, which will be mentioned under scrap valuation.

Scrap Valuation

HAVING established definite relations between various grades of scrap and between these grades and iron, it is a simple matter to determine, for any plant, their economical price limits. The value of any grade of scrap is dependent not only upon its relationship to other grades of scrap, but also to the price of pig iron. For example: Basic iron costs $15, and heavy melting scrap, such as structural grades, $11. This combination melts with 42 per cent iron and 58 per cent scrap. The cost per ton of mixture is, therefore, $12.68.

It can be assumed, for purposes of estimating, that the open-hearth loss for iron is 11 per cent and for scrap and the iron in ore 4 per cent. The loss on this mixture would, therefore, be 6.94 per cent and the increment of cost for this loss amounts to $0.95, making the scrap and iron cost per ton of metallic yield $13.63.

If we propose to use some light bundled sheet scrap requiring 60 per cent iron in the mixture, we cannot pay more for this scrap than the mixture costs with heavy melting. Our mixture cost is $13.63. Our iron cost is $9 of this, which leaves $4.63 for the combined loss increment and the price of the 0.40 ton of sheet scrap. The loss in this case will be 8.20 per cent, producing an increment of $1.13, and a maximum price for the sheet scrap of $\left(\frac{4.63 - 1.13}{0.40}\right) = \$8.75$ a ton. Charging the sheet scrap, however, requires more equipment, and a longer time than the corresponding weight of heavy melting scrap. It must be penalized approximately 25c. a ton of scrap. This makes the net price at which this sheet scrap can be used, with no cost advantage or disadvantage, $8.50 per ton. Its relationship to heavy melting under these

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For a Given Class of Scrap, There Is a Proper Amount of 1 Per Cent Silicon Pig Iron to Go with a Definite Amount of the Scrap

Sheets, Bundled Turnings, Light, Rusty, 60% Iron		Light, Clean Sides and Ends, Compressed Sheets, 49.2% Iron		R.R. Bolsters, Light Structural, Misc. Merchant Mill, Structural Punchings, 43% Iron		No. 1 Heavy, Heavy Purchased, Forging Scrap, 42% Iron		Rails, Steel Car Wheels, Springs, Locomotive Axles, 37.5% Iron		14% Manganese, Rails, Castings, 21.9% Iron	
Scrap	Iron	Scrap	Iron	Scrap	Iron	Scrap	Iron	Scrap	Iron	Scrap	Iron
63,000	94,500	63,000	62,500	63,000	47,900	63,000	47,400	63,000	36,800	63,000	17,700
62	93,000	62	61,500	62	46,800	62	46,700	62	36,200	62	17,400
61	91,500	61	60,600	61	46,000	61	45,900	61	35,600	61	17,100
60,000	90,000	60,000	59,700	60,000	45,300	60,000	45,200	60,000	35,000	60,000	16,800
59	88,500	59	58,800	59	44,500	59	44,400	59	34,500	59	16,500
58	87,000	58	57,800	58	43,700	58	43,700	58	34,000	58	16,200
57	85,500	57	56,800	57	43,000	57	42,900	57	33,400	57	16,000
56	84,000	56	55,900	56	42,400	56	42,200	56	32,800	56	15,700
55	82,500	55	54,900	55	41,600	55	41,400	55	32,200	55	15,400
54	81,000	54	53,900	54	40,900	54	40,700	54	31,600	54	15,100
53	79,500	53	53,000	53	40,100	53	39,400	53	31,000	53	14,800
52	78,000	52	52,000	52	39,300	52	39,200	52	30,400	52	14,500
51	76,500	51	51,000	51	38,500	51	38,400	51	29,800	51	14,200
50,000	75,000	50,000	50,000	50,000	37,800	50,000	37,600	50,000	29,200	50,000	14,000
49	73,500	49	49,000	49	37,100	49	36,900	49	28,600	49	13,800
48	72,000	48	48,000	48	36,300	48	36,100	48	28,100	48	13,500
47	70,500	47	47,000	47	35,600	47	35,400	47	27,500	47	13,200
46	69,000	46	46,000	46	34,800	46	34,600	46	26,900	46	12,900
45	67,500	45	45,000	45	34,100	45	33,900	45	26,300	45	12,600
44	66,000	44	44,000	44	33,300	44	33,100	44	25,700	44	12,300
43	64,500	43	43,000	43	32,300	43	32,300	43	25,100	43	12,000
42	63,000	42	42,000	42	31,800	42	31,600	42	24,500	42	11,700
41	61,500	41	41,000	41	31,100	41	30,900	41	23,900	41	11,400
40,000	60,000	40,000	40,000	40,000	30,300	40,000	30,100	40,000	23,300	40,000	11,200
39	58,500	39	39,000	39	29,600	39	29,400	39	22,800	39	11,000
38	57,000	38	38,000	38	28,800	38	28,600	38	22,300	38	10,800
37	55,500	37	37,000	37	28,100	37	27,900	37	21,700	37	10,500
36	54,000	36	36,000	36	27,300	36	27,100	36	21,100	36	10,200
35	52,500	35	35,000	35	26,600	35	26,400	35	20,500	35	9,900
34	51,000	34	34,000	34	25,800	34	25,600	34	19,900	34	9,600
33	49,500	33	33,000	33	25,100	33	24,900	33	19,300	33	9,300
32	48,000	32	32,000	32	24,400	32	24,100	32	18,700	32	9,000
31	46,500	31	31,000	31	23,600	31	23,400	31	18,100	31	8,700
30,000	45,000	30,000	30,000	30,000	22,800	30,000	22,600	30,000	17,500	30,000	8,400
29	43,500	29	29,000	29	22,100	29	21,900	29	17,000	29	8,200
28	42,000	28	28,000	28	21,300	28	21,100	28	16,500	28	7,900
27	40,500	27	27,000	27	20,500	27	20,400	27	15,900	27	7,600
26	39,000	26	26,000	26	19,700	26	19,600	26	15,300	26	7,300
25	37,500	25	25,000	25	19,000	25	18,900	25	14,700	25	7,000
24	36,000	24	24,000	24	18,200	24	18,100	24	14,100	24	6,700
23	34,500	23	23,000	23	17,500	23	17,400	23	13,500	23	6,400
22	33,000	22	22,000	22	16,800	22	16,600	22	12,900	22	6,100
21	31,500	21	21,000	21	15,900	21	15,900	21	12,300	21	5,800
20,000	30,000	20,000	20,000	20,000	15,200	20,000	15,100	20,000	11,700	20,000	5,600
19	28,500	19	19,000	19	14,500	19	14,400	19	11,100	19	5,300
18	27,000	18	18,000	18	13,700	18	13,600	18	10,600	18	5,000
17	25,500	17	17,000	17	13,000	17	12,900	17	10,000	17	4,700
16	24,000	16	16,000	16	12,200	16	12,100	16	9,400	16	4,500
15	22,500	15	15,000	15	11,500	15	11,400	15	8,800	15	4,200
14	21,000	14	14,000	14	10,700	14	10,600	14	8,200	14	3,900
13	19,500	13	13,000	13	10,000	13	9,900	13	7,600	13	3,600
12	18,000	12	12,000	12	9,200	12	9,100	12	7,000	12	3,400
11	16,500	11	11,000	11	8,400	11	8,400	11	6,400	11	3,100
10,000	15,000	10,000	10,000	10,000	7,500	10,000	7,500	10,000	5,800	10,000	2,800
9	13,500	9	9,000	9	6,700	9	6,700	9	5,400	9	2,500
8	12,000	8	8,000	8	6,000	8	6,000	8	4,800	8	2,300
7	10,500	7	7,000	7	5,200	7	5,200	7	4,200	7	2,000
6	9,000	6	6,000	6	4,500	6	4,500	6	3,600	6	1,700
5	7,500	5	5,000	5	3,700	5	3,700	5	3,000	5	1,400
4	6,000	4	4,000	4	3,000	4	3,000	4	2,400	4	1,100
3	4,500	3	3,000	3	2,200	3	2,200	3	1,800	3	900
2	3,000	2	2,000	2	1,500	2	1,500	2	1,200	2	600
1	1,500	1	1,000	1	800	1	800	1	600	1	300
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Improved Equipment Widens Field For Die Castings

By WILLIAM M. LESTER
Lester Die & Machine Co., Cleveland

DIE casting manufacturers have made a determined effort in the past to better their product and, through mechanical improvements in casting equipment, in addition to the improved alloys used, have been able to meet competition from the pressed steel, forging and cast iron industries.

Two Types of Die Casting Equipment

The actual casting methods employed in the art have changed but slightly during the past decade. These can be classed in two groups. The first method employs the plunger mechanism, where a positive mechanical pressure on the casting material is secured in a pumping mechanism submerged in a bath of the material. The second method depends upon an air gooseneck device, where pneumatic pressure forces the alloy from a closed chamber into the mold. Through changes in equipment much laborious manual effort was eliminated, but the quality of resultant castings was not improved to any great extent by this factor.

The problems to be confronted were many-fold. In the plunger type of pumping mechanism the main difficulty encountered was in securing a definite fit between the plunger and its cylinder which would endure. In use a plunger, having the exact working clearance to build up and hold a suitable casting pressure, would, following a few hours' use, lose its ability forcefully to propel the molten material into the mold. This short life of the plunger, evidently caused by the high working temperature and pressure, together with the washing action of the fluid alloy, could be prolonged by close temperature control. The result, however, was still far from satisfactory.

Difficulties Encountered with Air Gooseneck Type

A more defective method has been resorted to for the die casting of aluminum-base alloys. This has been carried out in an air gooseneck type of injecting mechanism, the faults of which are many-fold. A comparatively higher working temperature must be used because of limited pressures. This resulted in a greater iron contamination in the resulting castings and a shortening in the life of the parts subjected to these adverse conditions.

The release of high-pressure air with terrific impact upon the surface of the molten material, in its inclosed chamber, imparted a great velocity to the metal entering the cavity of the die. So little time is required for the filling of the die cavity that the air present therein, before the injection of metal, has no time to escape and is subsequently trapped in the casting in the form of blow holes and surface air swirls.

Another difficulty encountered in air goosenecks is quite common to all the various types which depend upon filling the gooseneck from the front or discharge nozzle. Slag, ever present on the surface of the metal in the holding pot into which the gooseneck is immersed, will seek the position shown in Fig. 1. Upon the release of the casting air it is quite apparent that the slag is the first to enter the die. This slag contamination can be minimized by either the use of sufficient overflows in the die to trap the slag or the frequent skimming of the molten metal in the holding pot. The first solution brings in the counter element of an increased air space in the die cavity and a corresponding detrimental air condition. The second solution proves to be more effective but less desirable where production alone is the governing factor.

Developments during the past year in die casting equipment promise to eliminate many of the above-mentioned evils. In the plunger type of casting machine we find a mechanism which satisfactorily performs as long as six months without replacement of either the plunger or its cylinder. The pumping action, carried on in the adverse conditions before outlined, creates a certain amount of wear in the working parts which is automatically taken care of by their features of design.

Allowance for the slag condition in the air gooseneck mechanism has been made in the device shown in Figs. 2 and 3. Fig. 2 shows the gooseneck

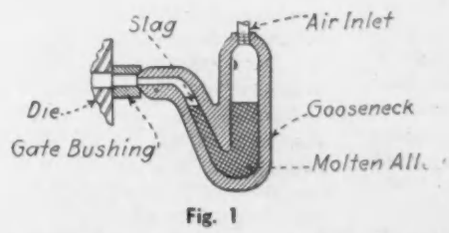

Fig. 1

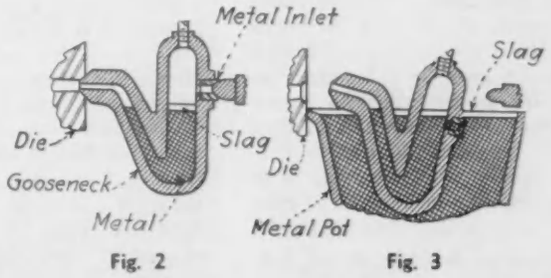

Fig. 2

Fig. 3

Fig. 1—In the air gooseneck type of die casting machine, shown here, the nozzle is dipped down into a bath to receive the metal. When the gooseneck is dipped back the slag that has entered with the metal remains near the top of the front chamber. Sometimes metal adheres to the nozzle preventing it from making close contact with the bushing connecting the gooseneck with the die. As a result metal flies out at that point when it is being forced into the die. Trouble of this sort is experienced mostly with aluminum-base castings. Fig. 3—Gooseneck in charging position. In this design the metal inlet is in the back, and the front, or nozzle, does not go below the surface of the metal. The slag remains in the back chamber. The metal inlet is shut off automatically, and when the air is applied the slag is forced downward but never enters the front of the gooseneck, every day or two the accumulation of slag is blown out by applying the air pressure on the back of the gooseneck. If any of the metal hardens at the inlet so that valve does not seat tightly, the only effect is that air escapes through the valve, which is not so bothersome as the escape of metal at the nozzle. Fig. 2—New design of gooseneck in casting position, showing the nozzle in direct contact with the die rather than with an intermediate bushing. Elimination of the bushing means a decrease of 50 per cent in the size of the sprue.

in casting position. When the casting air is released it is quite apparent that the slag will not enter the die unless the size of the cavity in the die taxes the extreme capacity of the gooseneck. Fig. 3 clearly explains the charging condition which retains the slag in the back end of the gooseneck.

Fig. 2 shows the gooseneck coming in actual contact with the die rather than with the intermediate bushing shown in Fig. 1. This development is advantageous in the following manner: First, it has meant a decrease of at least 50 per cent in the size of the sprue, which constitutes the largest part of the gate or surplus to the casting. This decrease has brought about a corresponding change in the amount of air which must be removed from the die to permit correct casting performance. Second, an increase in casting production is secured by elimination of much of the metal to be solidified. Third, production is also boosted by this shortening of the sprue which now permits a corresponding shortening of the die opening.

Tests have proved that this mechanism produces a much superior grade of casting, not only with respect to solidity, but also surface finish.

Considerable experimentation is still in force, not only along lines above detailed, but also in respect to effect of throttling the velocity of the metal entering the die in the air gooseneck device, the possibility of using a plunger type of mechanism on aluminum-base alloys, the commercial die casting of higher temperature alloys such as the brasses and bronzes, and many applications of die casting procedure to special products before thought impossible, but now possible through the superior physical characteristics of the resulting die castings attained.

Fuel Economy in Large Blast Furnaces

By ROY P. HUDSON
Chemist, Elk Horn Coal Corpn.,
Wayland, Ky.

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UNDER similar conditions the present-day large blast furnaces do not seem to be so economical with fuel as the smaller furnaces; the reason for their existence can be accounted for only by other considerations affecting the cost of production.

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WITH average mixtures of ores, average quality of coke and usual grades of pig iron, every well-working average-size hearth should consume at least 6000 lb. of coke per square foot in 24 hr. On the above basis, 400 tons of pig iron can be produced in a 14-ft. hearth. This coincides with operating results.

This amount of coke consumed in a day corresponds with 250 lb. per square foot each hour. This is considered good work, although many of the smaller furnaces have burned more than 300 lb. On the other hand, the large-hearth furnaces burn less coke per square foot, the 17½-ft. hearth consuming only about 200 lb.

Modern 1000-ton stacks operate on a fuel consumption of about 1900 lb. of coke for each ton of iron. The hearths of such furnaces are from 25 ft. to 25 ft. 6 in. in diameter. On the above basis a hearth of 25 ft. 4 in. burns only 3770 lb. of coke a day per square foot of hearth area, or 157 pounds an hour. If we assume that the large-hearth furnaces can burn 250 lb., then the hearth diameter required to produce 1000 tons of pig iron a day, with a fuel consumption of 1900 lb. of coke per ton of iron, is less than 18 ft.

J. E. Johnson, Jr., has stated that the measure of the rate of driving a furnace should not be expressed as the amount of coke burned per square foot of hearth area in a unit of time. The real combustion space of the furnace is not a single plane at the tuyeres. Combustion goes on throughout the bosh; that is, from the tuyere plane to the top of the bosh. And to obtain truly comparable figures we should use the coke burned per cubic foot of this space.

On this basis, the large-hearth furnaces are really as hard driven as any, for two reasons:

First, while the hearth is much larger than that of other furnaces with the same height and bosh diameter, by this method of figuring this change affects only the smaller diameter of the frustum of an inverted cone whose base is the bosh diameter. Hence the percentage of change in its volume produced by this increase in its smaller diameter is less than half that produced in the smaller area.

Second, development of the wide-hearth furnace has been accompanied by a lowering of the top of the bosh, so that its vertical height is decidedly smaller. This reduces the volume of this zone of the furnace as much as the widening of the hearth itself increases it.

In October, 1920, the Southern Ohio Pig Iron and Coke Association approved and adopted a formula for calculating the tonnage capacity of a blast furnace, essentially as follows:

From figures prepared on a number of different size furnaces, it has been found that with good practice 60 lb. of coke can be burned each 24 hr. per cubic foot of working volume. The working volume is taken as the volume from center line of tuyeres to 2 ft. below the bell closed.

I believe this to be a good rule, because it is not confined to the hearth of the furnace and because it coincides with operating data furnished by the modern 1000-ton furnaces. The capacity of the furnace is expressed in terms of pounds of coke burned a day. To translate this result into tons of production it is of course necessary to adopt a base coke, a base hot-blast temperature and a base theoretical yield of ore mixture.

It would seem that 1900 lb. of coke per ton of iron is apparently too much fuel, on the basis of 1000 tons daily production. Many furnaces with half that production require much less coke per ton of iron. It would seem that the large furnace would have the advantage due to less radiation loss, and less heat extracted by water cooling, in proportion to its output.

However, the better control of the charging of the small furnace, together with its relatively smaller solution loss, seems to offset the large-furnace advantage of smaller heat losses from radiation and cooling.

Therefore, as far as cost is concerned, the only excuse for the construction of a 1000-ton stack is that such a tonnage is required each day, and one large furnace can produce it at a lower total cost than two small furnaces, because interest and depreciation charges, labor costs and power costs are lower.

X-Ray Inspection of Welded Pressure Vessels

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FOR the inspection of fusion-welded boiler drums and pressure vessels as required by the A.S.M.E. code, the Henry Vogt Machine Co., Louisville, Ky., has installed a 345,000-volt, cascade-type X-ray machine with many distinctive features. The machine is designed to give maximum penetration, complete protection from the X-ray beam and from the high voltage, flexibility of operation, and maximum protection to its own mechanism.

The high voltage generating apparatus is housed in a cab of channel and angle iron framework with welded sheet metal sides. The floor is of oak, which acts as a shock absorber. The cab is mounted on motor-driven trucks of standard railway gage. The top framework is braced and equipped with cables, so that the entire machine may be lifted by an overhead crane and swung to any part of the shop.

The two X-ray tubes are mounted inside a lead drum which is X-ray proof. The advantage of using two tubes with one high-voltage generating apparatus lies in the fact that they cut down the time of inspection of longitudinal seams 50 per cent. The drum is adjustable vertically, laterally and horizontally.

The electrical control for the X-ray machine proper is of the shock-proof type, panel mounted. The operator, standing on the platform which is an integral part of the cab, can observe the high-voltage apparatus through a large window and also see the boiler drum or vessel which he is photographing through a lead glass window in a lead-lined door.

To the left of the operator on the control platform is a dark room equipped with safety cabinet red lamp and all conveniences for loading film holders and storing used and unexposed films. Should the operator have to journey back and forth from the stationary dark room to the machine, he would lose considerable time unless a great number of film holders were available. With the dark room so close at hand, the operator can load his film holder while the machine is in operation. He can also X-ray an entire drum before taking any of the exposed films to the dark room.

The high-voltage generating equipment constitutes a radical departure from conventional design. It is so constructed that instead of the step-up transformer and rectifying units being built in one case and having a definite capacity limit, they are built in several sections. Each section is a separate unit capable of furnishing 115,000 volts. Three of these blocks are essentially connected in series to give a total output of 345,000 volts. This arrangement not only permits conservation of space for a given voltage, but with the cascade principle the power of the equipment may be increased at any time by adding another block. In this manner the power of the apparatus may be increased at will to a million volts or more.

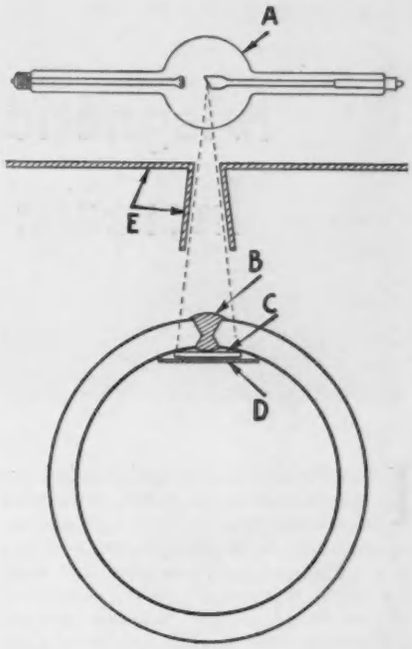

FIG. 1—Diagram showing how the X-ray pictures are taken. The X-rays, emitted from tube A, pass through the weld, B, and produce a shadow picture on film C, which is backed by a sheet of lead foil, D.

The rectifying tubes, which are an integral part of each transformer block, are of the heavy-duty type, especially suited to industrial work. They are provided with radiator fins which dissipate the heat and permit continuous operation without being subjected to strain. They can be operated in any position. As an added precaution against physical damage, they are mounted on spring suspensions which act as shock absorbers, the flexible cable leads preventing excessive vibration.

No wood or paper insulation is used anywhere in the unit. Both inside and outside the transformer, Bakelite and electrose are the insulating media. To guard against a corona, nickel-plated tubing is used for high-voltage electrical connections. Corona shields in the form of balls or spherical caps are provided at every point where the discharge might occur.

An oil-immersed voltage stabilizer insures constancy of operation and protection for the machine and X-ray tubes. By employing the stabilizer, the operator can set the machine and leave it, knowing that the current

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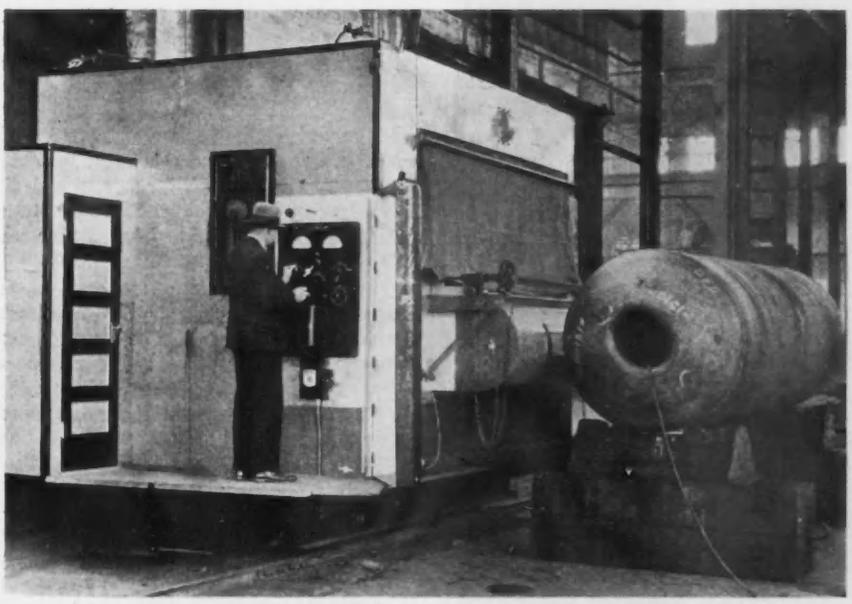


EQUIPMENT set up to X-ray a pressure vessel. The power plant is located in a cab mounted on motor-driven trucks of standard gage. The cab can be picked up by crane and moved to any part of the shop. Notice the door at the operator's right which shields him from any scattered X-rays which might escape into the room. To his left is a small dark room for loading film holders and storing films.

Magnetic Clutch and Brake Control Increase Production Quota Range

By J. R. ARMSTRONG
Dings Magnetic Separator Co., Milwaukee.

IN a world of changed conditions, manufacturers of power transmission equipment have an outstanding opportunity to render service to industry. This arises from the fact that *there is a need to have industrial plants so set up that they can operate efficiently over a wide range of production quotas.* A number of manufacturers and engineers believe that a promising means to this end lies in the perfection and more general application of the magnetic clutch for power transmission purposes.

Mechanically speaking, "clutch" is inseparably associated with "control," without which orderly progress would be impossible. The outstanding virtue of the magnetic clutch is that it imparts a high degree of accuracy to the control and also makes it automatic and flexible. In general, magnetic clutches can be said to offer the following opportunities:

1. They eliminate much of the operating labor required for many existing installations of mechanical clutches, couplings, etc. (Particularly important for remote or inaccessible locations.)
2. They reduce the size of individual motors which formerly had to be purchased large enough to deliver a big starting torque even when the load was considerably less than the power available at normal operating speed. (The need for heavy starting devices, overload relays, etc., is minimized or even eliminated.)
3. They modernize, inexpensively, line shaft drive systems by converting them from manual control to a modern type of remote or automatic control.
4. They provide a very fast and convenient method for securing the super-accurate control such as is required for "inching" movements on certain types of machines.

In the past one of the chief points in favor of the unit drive system of power transmission over group drives was that the individual motor more nearly approached the ideal of automatic control. The purpose of magnetic clutches is to give a real automatic control to both individual and group systems of power transmission.

The magnetic clutch offers interesting possibilities in connection with the use of large single, power units such as the reciprocating steam engine, oil engine, Diesel engine, or electric motor. Users have found that operating labor can be saved as well as power and time by concentrating the supervision and control into the hands of a single person.

An opportunity to reduce the investment in individual motors is afforded the plant that prefers unit drives. Motors may be purchased of minimum size and a magnetic clutch used to make available the full-speed power of the motor against the starting load. An additional advantage is claimed in protecting the electrical circuit against machine jamming and overload.

In the iron and steel industries the magnetic clutch has found favor for driving large power presses. This use has grown with the trend toward stamping metal parts. Such installations usually include a magnetic brake, with the action of clutch and brake synchronized through control buttons. In discussing the trend in control systems being used on large presses, G. A. Reinhard, of Cleveland, calls attention to the following:

"Originally, all of these large presses were mechanically operated, which meant that if there was more than one man on the press, it was necessary to have an extra operator to see that all the men at the press were clear before he pulled the starting lever. On a two-man press, this meant an additional man, or 50 per cent more direct labor. On a four-man press, it meant a fifth man, or a 25 per cent increase for direct labor. In addition, the hazard was great.

"The first improvement came in the form of an electrically operated brake and clutch, both equipped with push buttons. A simple contactor was all that was necessary as a control, in

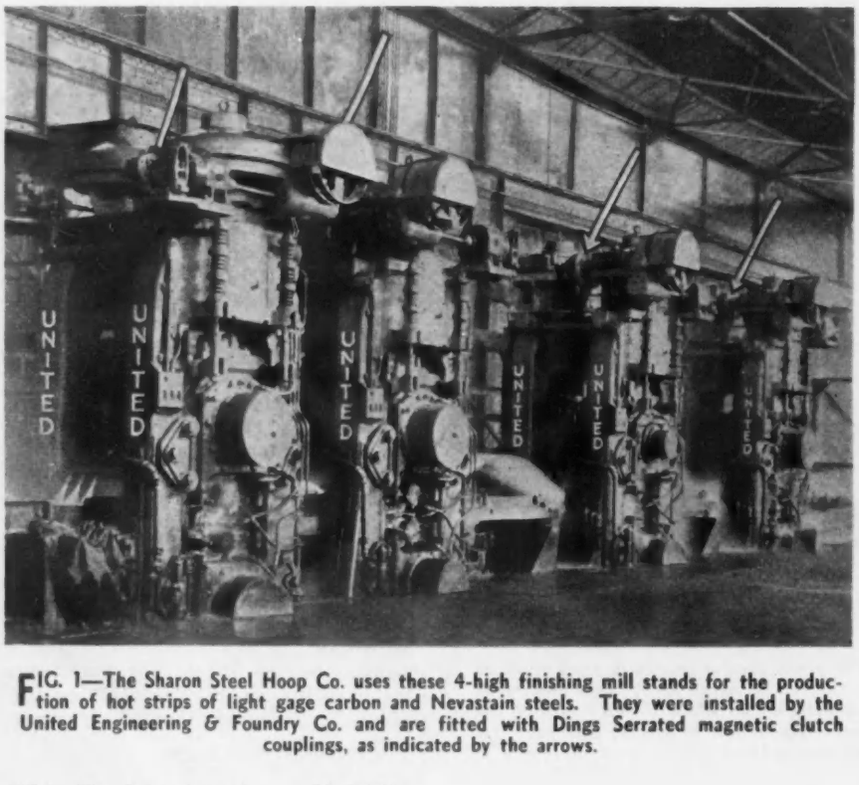


FIG. 1—The Sharon Steel Hoop Co. uses these 4-high finishing mill stands for the production of hot strips of light gage carbon and Nevastain steels. They were installed by the United Engineering & Foundry Co. and are fitted with Dings Serrated magnetic clutch couplings, as indicated by the arrows.

addition to the buttons. These were fitted with a flat plate against which the operator placed his hand, and there were as many of these push buttons as there were hands operating the press. With a two-man press there were four buttons that would have to be pressed simultaneously, the last button pushed causing the stroke to start.

"This simple electric control represented a considerable improvement over mechanical control because it eliminated the extra man and also the hazard of some one getting his hands under the press after it had been started. However, there were difficulties to overcome, such as the elimination of drag set up between clutch and brake, also the question of inching. With this simple control, both the clutch and brake were being simultaneously energized; thus, if the clutch operated faster than the brake, both would drag. Likewise, if the brake set faster than the clutch disengaged, due to the dying down of the flux, there would again be dragging.

"In some recent installations, a simple hook-up has been devised which insures both brake and clutch operating in proper sequence. In the starting position the brake is energized from a simple contactor which has a time element to assure that the brake is completely energized before an auxiliary contact is closed which energizes the clutch. For stopping the operating cycle of the press is divided into two parts. At any point going down from top to bottom dead center, the brake is instantly applied if any one hand is removed from its proper push button, but after bottom dead center has been reached the operation of both clutch and brake are controlled by limit switches. That is, as the press again rises to top dead center the clutch is first released and then the brake is applied automatically by the limit switches. Thus the workers are free to release their hands and go about their work after the bottom position has been reached.

"For presses that may be required to operate more than one cycle at a time, a master selector can be provided which has three positions—dead, single cycle, and continuous. This master selector is supposed to be accessible to the foreman only.

"A satisfactory control for the inching operation has also been secured. A separate inching button is supplied which must be pushed by the operator to release the brake and engage the clutch. However, to eliminate the human element this button actually only operates a relay circuit with a time element on it. Thus, when the inching button is pressed down, the relay operates and the circuit is closed for a predetermined length of time only. The length of time (hence movement) is readily adjustable by means of an ordinary rheostat.

"Considerable interest has recently been shown in the development of a new type of limit switch which is said to have corrected one of the greatest faults of equipment of this type, namely, grounding. To be free from grounding trouble will practically insure against all hazards of repeating."

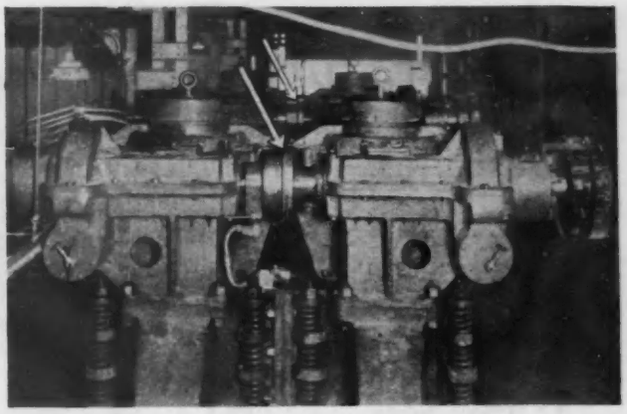


FIG. 2—A close-up view of the magnetic drive used on the finishing mill stands shown by arrows above. The serrated clutch coupling differs from the plain magnetic clutch in that V-tooth serrations are applied to the contacting surfaces to make engagement instantaneous and positive, and to avoid slippage.

The Place of the Steel Railroad Tie

IN the discussion of ways and means of increasing the uses of steel products, the question comes up now and again of the status and prospects of the steel railroad tie. With 428,000 miles of standard gage track laid on main lines, sidings and yards in the United States, it is evident that even a moderate replacement of wood ties by steel would mean much to the steel industry.

It is 30 years and more since the Pittsburgh, Bessemer & Lake Erie Railroad, the ore-carrying subsidiary of the Carnegie Steel Co., laid considerable sections of its main track on steel instead of wood, and something like 300,000 steel ties have been laid on this line. Other roads, including several which have a large traffic from steel plants, also various railroad subsidiaries of the Steel Corporation, made trial of the metal tie on a scale that promised well. The maximum of orders seems to have been reached about 1907 or 1908, though no statistics were gathered by the American Iron and Steel Institute until 1910, when the production was 49,048 gross tons. That was high point, so far as the records go, the average for the next six years being about 39,000 tons. For the years 1917-30 inclusive the average was 14,000 tons, with a low of 6438 tons in 1918 and a high of 26,310 tons in 1920. As against 10,614 tons in 1930 last year's output was 14,246 tons.

The development of the later and heavier type of steel tie plate fastened to the wood tie by screw spikes has been an important factor in the diminished vogue of the steel crosstie. This construction has greatly reduced the wear on the ties and under good conditions would probably give the creosoted wood tie a life of 25 years. A steel tie could be fairly rated at 30 years and upwards in service and would still have a scrap value, but on the other hand is the first cost of $4.50 to $5, as against $2 for a creosoted wood tie. In main line use there is also, with the steel tie, the problem of securing perfect insulation in the operation of signal systems.

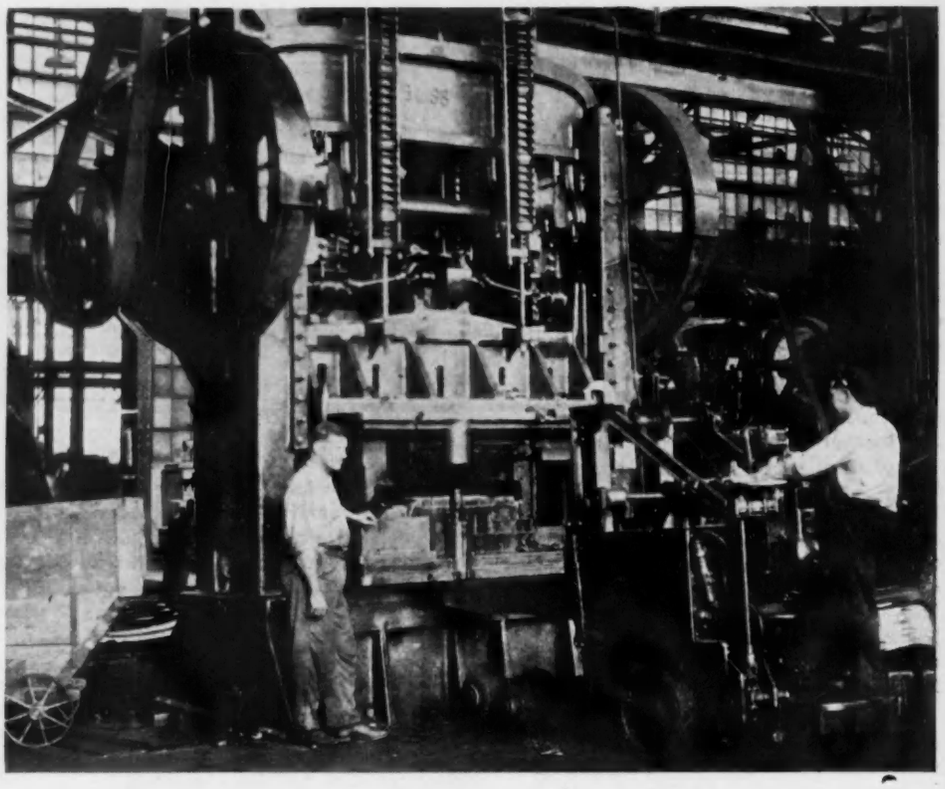
For mine trackage the light steel tie no doubt will continue to have the preference over wood. It can be taken up easily and can be relaid indefinitely, whereas wood ties can usually be relaid but once.

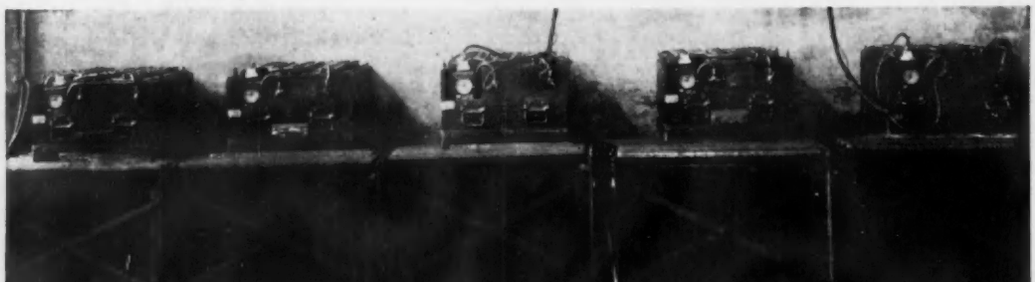
Generally speaking, abundant timber and long life for treated wood have been determining influences in the United States, whereas in countries where timber is scarce and insect life is destructive the steel "sleeper" has been in increasing demand as railroads have been extended into new territory. In this country proponents of the steel crosstie may find satisfaction in the part their propaganda for steel has had in the steady improvement of track construction. It has had much to do in bringing the tie plate to its present weight and effectiveness and its importance as a contributor to steel mill tonnage, tie plate production in 1929 amounting to 556,045 tons. That is nearly one-third the tonnage of rails above 85 pounds to the yard produced in the same year.

Servicing Truck Batteries at the Mullins Mfg. Co.

By WILLIAM MUSSEN

ELECTRIC trucks play an important part in transportation at the plant of the Mullins Mfg. Co., manufacturer of metal boats and varied stamped and other metal products. In this picture, one of the numerous trucks in the company's fleet is pushing a large forming die into position.





THE charging racks are equipped with rollers upon which the batteries may be placed with minimum effort. When a truck operator arrives with a battery, he slides the discharged one out upon the rollers and then slides a freshly charged battery into his truck. Water is usually added at periods of from a week to 10 days.

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THE problem of battery charging is simplified by the overhead arrangement of the charging equipment. Fourteen batteries are used, all of the Exide-Ironclad MVA-19 type. Ampere-hour meters are installed upon each battery to facilitate correct charging. Aside from the occasional cleaning of the battery tops and the addition of water, maintenance work has been held to a minimum, the total repair charges for the 14 batteries amounting to $24.73 for a four-year period. The greatest portion of this expense was in connection with a battery which fell from the charging platform.

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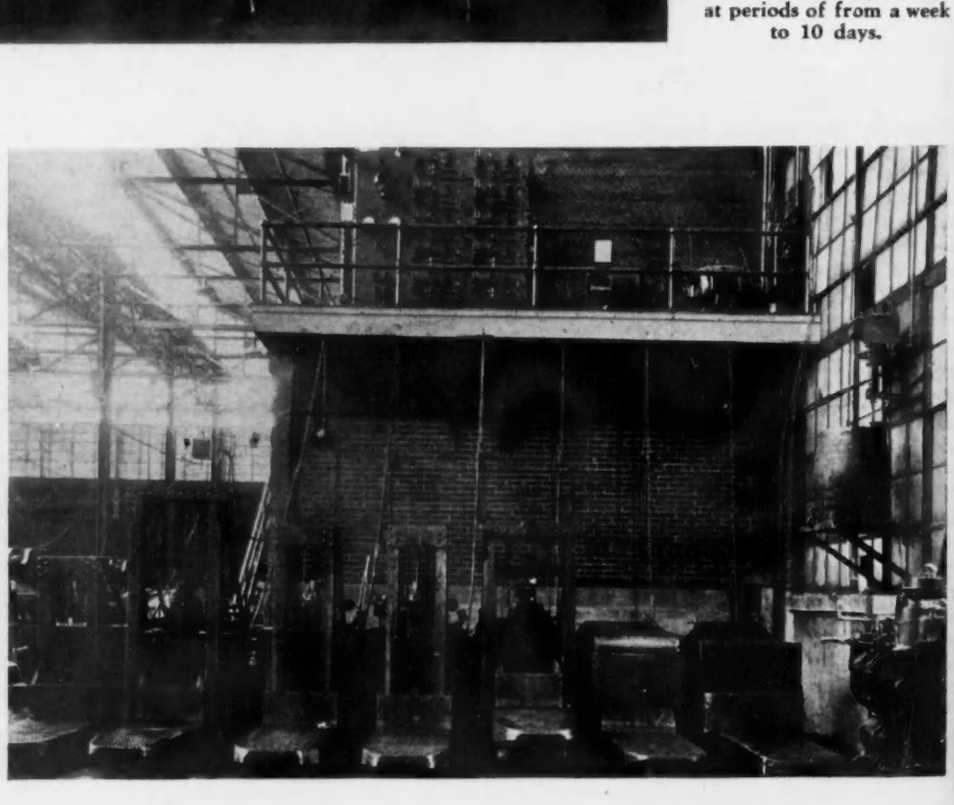

PUTTING THE QUESTION MARK TO WORK

—38—

Nitriding Difficulties

We have had a lot of trouble with spalling of parts after nitriding. Is there any way to overcome this?

A. D. R.

SPALLING of parts after nitriding can be reduced to a minimum by using a chrome-vanadium nitriding steel containing from 0.50 to 2.50 per cent chromium and from 0.30 to 2.00 per cent vanadium. In addition to being extremely hard and wear-resistant, the case produced on this type of steel is remarkably tough and ductile, with the result that comparative freedom is obtained from spalling and chipping. Spalling can be further eliminated by decreasing the depth of the nitrided case and by packing the parts to be nitrided in copper chips or filings.

T. C. F.

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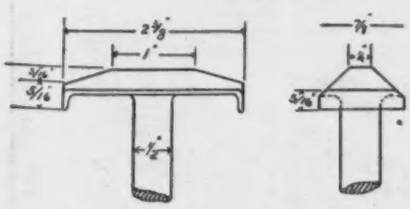
—39—

Methods of Forging

A special ½ in. "T" bolt as used on one of the Chinese railroads is giving us considerable trouble. We have obtained a large order for these bolts and want to reduce production cost to a minimum. You will observe that there is a considerable volume of metal in the head, which, when formed on ½ in. bar stock means that 4½ in. of the bar must be upset. Even with three or four progressive stages in upsetting, we have not been able to obtain the desired results, chiefly due to the fact that the two end nibs will not flow satisfactorily into the die. We are therefore compelled to use ⅞ in. bar stock, swaging the shank down on a rotary swager, and forming a long, flat head by hand, only using our upsetting machine for the final forming blow. Can you help us in solving this problem?

General Forge Products, Ltd.,
Shanghai, China



SKETCH OF "T" BOLT HEAD.

WE would suggest forging the head end, leaving approximately 1 in. of the ½ in. stem projecting. We would then electrically butt weld this forging to a piece of the ½ in. round stock of the correct length. We feel that this would provide a satisfactory forging as well as an economical way to manufacture.

MOORE DROP FORGING CO.
Springfield, Mass.

WE find that one important way to help offset the reduced demand for standard products is to develop new products and new uses for old products. We are devoting our serious attention to improving the quality of existing commodities but at the same time are looking well into the future in our development work. Economies in production, the reducing of waste material and waste effort and the reclaiming of defective material, these are matters of established routine with us. It is to the development of new products, however, that we turn for our first hopes for increased plant activity.

M. L. Fawcett, Works Manager,
Westinghouse Electric & Mfg. Co.,
Sharon, Pennsylvania.

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—40—

Gamma Ray Service

In a recent issue of Iron Age, I noticed a paragraph about capsules which can be rented for making gamma ray exposures of heavy castings. Can you tell me where these may be obtained, and the rental charge?

R. L. W.

SEVERAL companies are furnishing the service referred to. One of these is the Radon Company, Inc., New York, which sends its product by mail to points within overnight distance of New York, and charges $35 for twenty-four hour use, or $55 for forty-eight hours. The capsule containing the radioactive material may be purchased outright for about $100, and has a life of approximately thirty days.

G. T. T.

—41—

Weight of Heavy Rails

When is a rail a "heavy rail"? In other words, where is the dividing line between heavy and light rails?

E. O. R.

AS the service demands of railroads increase, the standard railroad rail section also increases, but the more or less arbitrary line between so-called "light rails" and "heavy rails" does not always follow the change in engineering practice in this matter. In general usage the terms "light rails" and "heavy rails" are employed informally and somewhat loosely. The small branch road, for instance, may consider a 45-lb. rail heavy, by comparison with the lighter rails generally purchased. However, for the purpose of establishing differentials the steel mills have set a fixed dividing line between light and heavy rails, and considerable controversy has developed because of the difference in field use and market use of the two terms, "light rails" and "heavy rails."

Recently, THE IRON AGE published a reply to this same question of the dividing line between light and heavy rails, and this reply apparently calls for further amplification. From the market standpoint, rails up to and including the 45-lb. rail are designated by the Association of American Steel Manufacturers as "light rails." All heavier sections are classed as "heavy rails."

In the field, particularly in the western part of the country, the dividing line is placed at a somewhat higher level, but this of course does not affect the schedule of prices and differentials arbitrarily set by the steel companies at the point above mentioned.

Ed.

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"HOW can ruinous price cutting be prevented? At present even the seasoned and hardened purchasing agent is amazed at the extent to which some bidders will go for business." This comment was submitted by W. H. Magee, General Manager, Norwalk Company, Inc., South Norwalk, Connecticut, who adds, "Perhaps this does not fit the question and answer page but I think it is as important at the present time as some of the more technical questions." Many questions similar to the above are being received for this feature. Some of the answers will appear in future issues. Please address Forum Editor, Iron Age Publishing Co., 239 West 39th St., New York.

Portable Drill for Structural Work Has Gas-Engine Drive

THE Toggle-Bug portable drill built by the Guibert Steel Co., Pittsburgh, is now available equipped with a 6-hp. gasoline motor, thus permitting use of the machine in places where electric power is not available. The electric motor driven model was described in THE IRON AGE of March 12, 1931.

The machine is designed for drilling, reaming and countersinking heavy steel plates, shapes and other structural material in field or shop, and has capacity for drilling holes up to 1½ in. in diameter through 12 in. of solid metal. A variety of spindle speeds, from 250 to 600 r.p.m., is provided. The machine can be transported by crane, moved on its rollers, or when lightened, it can be carried by three men. In addition, the drill may be towed, auxiliary wheels and axles being available for this purpose. A simple system of weights and counterweights provide the necessary weight for drilling large holes. The load is so balanced that the machine can be moved along with one hand on its two rollers, which are equipped with roller bearings. When in use, ample pressure is exerted on the drill point by the operator leaning or sitting on the end of the 5-ft. handle.

The frame rests on adjustable legs, in addition to the rollers. This, it is stated, permits drilling a vertical hole in materials of different thicknesses, and also permits positioning the drill close to flanges in webs of large beams and H-sections. An extension is supplied for lengthening the rollers so that they may ride the edges of flanges when it is necessary to drill the webs of H-sections. A special attachment is also furnished for reaming the chords of bridges.

Coolant is supplied to the drill point from a tank mounted on the machine. All bearings and gears that transmit power are inclosed and run in oil or grease.

Capacity of Loadmaster Crane Increased

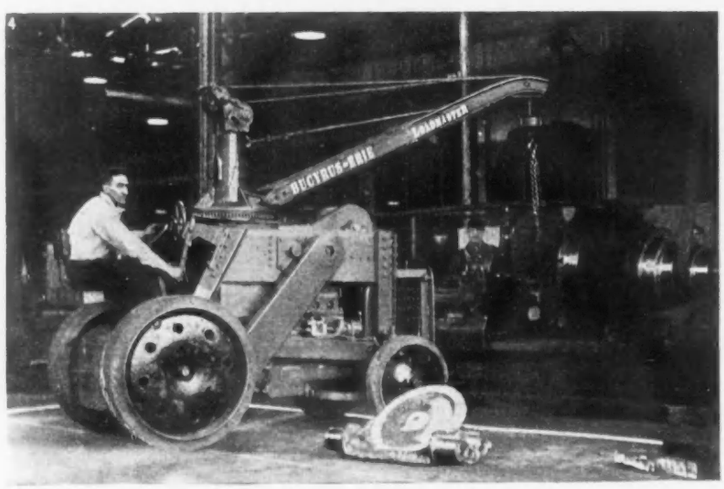
THE Loadmaster crane manufactured by the Bucyrus-Erie Co., South Milwaukee, Wis., is now available with either Case or McCormick-Deering power plants, and with increased capacity that permits lifting, swinging, carrying and placing loads weighing up to 4500 lb.

The crane has a wide range of adaptability. It can be used as a stationary revolving boom crane, as a crane traveling with its load, or as a tractor, and its mobility, compactness and special equipment make it suitable for indoor and well as outdoor work. It may be employed to load and unload trucks and cars, sort and pile stored material, handle pipe, serve machine tools and assist in overhauling and repair work. It is furnished with either wheel or crawler mounting, and pneumatic tires can be supplied for the wheel-mounted machines.

Special equipment includes a 20-in. magnet with independent gas-electric generating unit for handling iron and steel; single or double-drum power winches with line pull capacities up to 12,500 lb., and a 160-cu. ft. air compressor, which, mounted on the rear, may be used to supply air for riveting hammers and other air tools. A ⅓ cu. yd. clamshell bucket can be furnished, and a bulldozer with blade raised and lowered by the crane hoist line is offered for use in cleaning up stock piles and in grading. A water muffler, which eliminates fire hazard and reduces carbon monoxide in the exhaust gases, is also available.

Welding Society Meeting at Buffalo, Oct. 3-7

Seven technical sessions, at which more than 25 papers will be presented, have been planned for the twelfth fall meeting of the American Welding Society, to be held at the Hotel Statler, Buffalo, Oct. 3-7. One session will be devoted to non-ferrous welding and another to five recently completed fundamental researches in welding. A new feature is a merchandising session. During the same week the fourteenth National Metal Exposition will be held at the 174th Armory, Buffalo.



Capacity has been increased to permit handling loads up to 4500 lb.

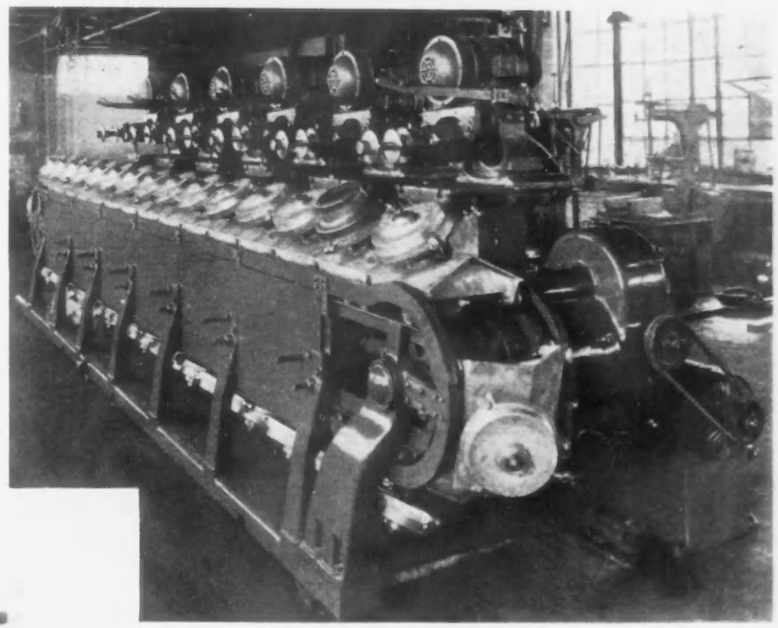
Continuous-Feed Polisher Removes Flash from Welded Hubs

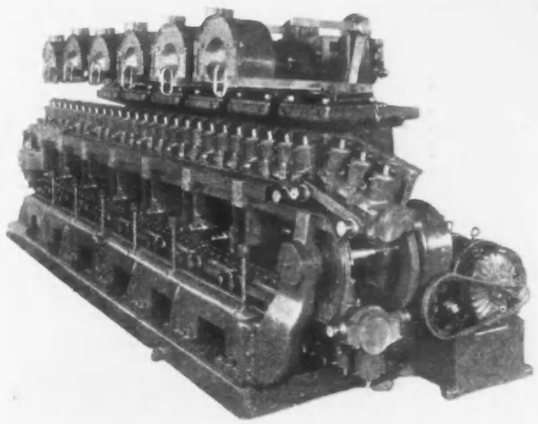
FLASH produced in welding together two sections of a pressed steel automobile hub is polished off by the continuous feed machine illustrated, which was built recently by the Sommer & Adams Co., 18511 Euclid Avenue, Cleveland. This machine is equipped with a number of work carriages that have a caterpillar type-feed, the carriages being driven by roller chain lugs. A rigid base serves as a housing for the feeding mechanism, and the carriage is run on rollers on a track built into the base. The drive is by a motor through Tex-rope drive and a gear box. Rate of feed is regulated by pick-off gears.

The carriages house spindles which as they go in the working plane are rotated by means of a sprocket at the lower end of each spindle engaging with a roller chain moving in the horizontal plane. A separate motor with chain drive actuates this mechanism and the rate of rotation of the spindles may be varied by changing sprockets. The spindles carry the work holding chucks; these grip the work automatically by means of fingers that are closed by a grooved collar actuated by contact with a cam on the machine bed.

Six polishing wheel heads are provided, as it is found that an operator can load and unload six times as many units as one wheel will polish. The spindles are driven by 5-hp. motors through Tex rope. Each feed is driven by a 3-hp. motor.

The polishing units are adjustable with respect to the center line of the work spindles, and the columns that carry the polishing units are adjustable vertically. The polishing units are counterweighted to swivel in a vertical plane so as to follow work of irregular contour by adjustment as to location and by swiveling the wheel spindles the wheel is presented to the work at the desired angle. The polishing units may be swiveled manually in a vertical plane when changing wheels. As an extra feature the machine may be arranged to swivel the polishing units automatically to time with the feed of the carriages in order to enter deeper cavities in the contour of the piece.





THE continuous-feed polisher for use on pressed steel automobile hubs is shown above. The machine at left, for small parts, has three spindles on each carriage.

Other Types Built

Continuous-feed machines employing the same general principle are built by the company for grinding, drilling, tapping, milling, automatic welding and broaching as well as for polishing and buffing.

The number of machining units with which the machine is provided is determined by the speed at which the operator can load and unload the machine. The bed is in sections, so that even after installation additional sections may be added to increase the capacity. The number of carriages depends upon the length of the bed. This machine has a rated capacity of 800 units per hour.

A smaller machine with a unique arrangement whereby three spindles are mounted on a single carriage to handle three small parts instead of one large part, similar to the use of a three-spindle drill head on a drill press, is shown in the second illustration.

Motors for Roller and Catcher Tables

New alternating-current motors have been developed for driving automatic roller and catcher tables in sheet and tin plate mills by the Reliance Electric & Engineering Co., Cleveland.

The motors are designed with torque characteristics to give rapid reversals. They may be built to reverse 40 times a minute. Low-inertia rotors are provided to keep reversing losses at a minimum.

The motors are enclosed for protection against dirt, oil and moisture. Internal and external fans are made of cast duralumin, thus utilizing lightweight material of great strength.

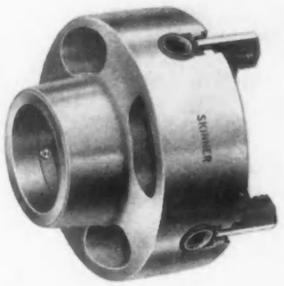
Ball bearings are used with cartridge-type mountings. The motors may be built so they are interchangeable for table-tilt and conveyor.

Integral Mount Jaw Chucks for Bench Lathes

FOR use with the taper nose spindle bench lathes of its manufacture, Hardinge Brothers, Inc., Elmira, N. Y., is offering "integral mount" jaw chucks, both universal and independent, in which the usual screw-and-plate mounting is eliminated and the mount becomes part of the chuck itself. This arrangement is emphasized as properly distributing the weight, eliminating mounting errors and increasing the accuracy through having a minimum of overhang.

The universal chuck of this type is key operated and the three jaws move simultaneously for chucking cylindrical pieces. Two sets of jaws are furnished, for chucking the outside and the inside of work, respectively. The body is made of carbon steel and the jaws and pinion are of alloy steel, heat treated. The scroll is made to high standards of accuracy.

Integral mount independent chucks are key operated, each jaw being moved separately for gripping either



Proper distribution of weight, elimination of mounting errors and increased accuracy through minimum of overhang are advantages claimed.

cylindrical or irregular-shaped pieces. Jaws are reversible for outside and inside work. The body of this chuck is of gray iron; jaws, jaw screws and thrust bearings are made of alloy steel, and are heat treated and ground to gage to assure accuracy and long life. The chucks are made by the Skinner Chuck Co., New Britain, Conn.

Automatic Circular, Hack and Band Saw Grinder

THE combination automatic circular, hack and band saw grinding machine brought out recently by the Wardwell Mfg. Co., Cleveland, is an outgrowth of the company's previous grinder designed for use on circular saws only. Grinding of metal and good cutting band saws and hack saws, as well as saws of circular type, has been made possible by means of an attachment consisting of a vise and vise support that is mounted on the side of the machine. When a circular saw is to be ground the attachment is removed by taking out four screws which attach the vise support to the frame of the machine and the replacement of a movable hinged section on the circular saw vise.

Other features of the redesigned machine include a ball-bearing head, and the addition of a special feed finger which eliminates the necessity of attention by the operator in case the saw has broken teeth.

The grinder does not depend on the shape of the edge of the grinding wheel to form the shape of the tooth. The grinding wheel follows the tooth down the face and up over the back. A universal cam permits the following of any shape of tooth, whether it has a straight or curved back. An adjustment in the eccentric permits the proper feed for saws with small or large teeth.

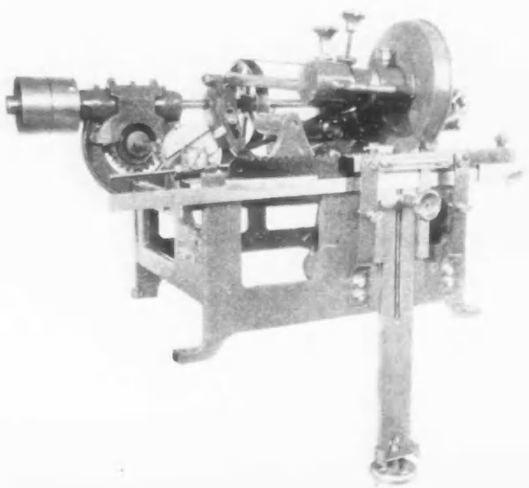
The machine has a capacity for grinding metal or wood cutting band saws ¼ to 6 in. wide, hack saws up to 36 in. long with spacing from 1/32 to 2 in., and circular saws 3 in. to 20 in. in diameter.

Hand Pump for Remote Pneumatic Operations

A QUICK source of air pressure for testing, inflation and other pneumatic operations remote from the usual sources of air supply is available in the hand-operated air pump developed by the Westinghouse Air Brake Co., Pittsburgh.

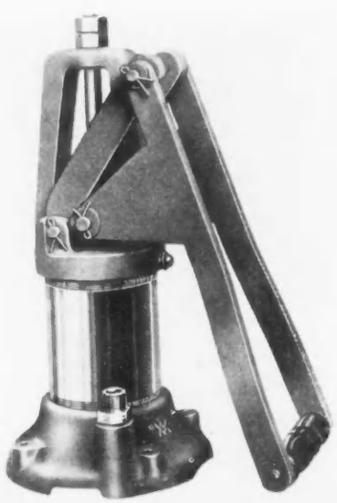
Ease of action through variable piston stroke and handle leverage is a feature. At the start of the stroke, when pump pressure is low, piston movement is large in relation to handle movement; at the end of the stroke, when pump pressure is high, piston movement is short while handle travel is relatively greater. Moreover, handle leverage increases with the stroke. It is stated that a maximum effort of only 37 lb. is required on the handle in pumping against 80 lb. pressure. The pump weighs 16 lb. and is 13 in. high.

The cylinder is made of seamless brass tubing, and the base is of iron. A ball inlet valve and Wabco-seated discharge valve are compactly arranged in the base at the end of the cylinder. Two adjusting nuts act as a piston stop to limit the stroke, transmitting all shocks to the frame. This protects the piston and packing cup, and, in maintaining straight travel of the cup in the cylinder, minimizes packing cup wear. The cup is of Wabco material.



(At left) The vise and vise support adapt the machine for grinding band and hack saws, as well as circular saws.

(At right) Ease of action through variable piston stroke and handle leverage is a feature. The pump weighs 16 lb.



Forcing Pace of Recovery Calls for Caution

BY DR. LIONEL D. EDIE

THESE columns have all along stressed the idea that the financial situation is the clew to a turning point in he industrial depression. Two weeks ago, definite signs of financial improvement were outlined and it was emphasized that sound recovery was being laid.

During the past two weeks, a speculative hysteria has been witnessed and grandiose schemes for forcing the pace of recovery have been announced. I cannot agree with those who think that such methods are necessary or desirable.

Just as the public and its leaders were beginning to face realities, this new joy-ride suddenly banishes the realities from consideration. The press has featured sporadic items of good news as if they were typical news, and has given the public a false impression of the true situation. For instance, through most of July, news stories played up the opening of a new factory here, the reemployment of a hundred men there, etc. But, when the July figures of New York State factory employment came along, they showed that employment had actually declined about 5 per cent from June and payrolls about 7 per cent. These facts were practically buried. Is it a newspaper's duty to tell the truth or to join in a super-ballyhoo campaign?

Press and radio have given this country a super-sensitive public emotionalism. What good does it do? The real need of this country is a stable public opinion, with some regard for facts. This new wave of jingoism seems to me to be both unnecessary and dangerous. If we are not careful, we shall undo the betterment that was beginning to develop in financial fundamentals.

A Commodity Pool for Inflation

Just as sound money seemed assured by adjournment of Congress and ending of the gold standard crisis, the idea of a commodity pool to inflate prices has set the commodity markets churning with speculative fever. This idea has been cultivated by various officials from Washington.

This commodity pool deserves to be viewed with grave caution. The commodity price curve was entitled to flatten out and to stabilize by virtue of the arresting of credit deflation. If we could have had a broad period of stability as a base on which to make all kinds of economic readjustments, we should have built slowly and safely toward recovery. But the proposals to push commodities up by strong-arm tactics may give us a house of cards.

No one begrudges the farmer 8 cent cotton instead of 6 cent, but when it is proposed to create new demand merely by showering loans on users of raw materials, there is too much forcing of the pace. A speculative bulge can be set off, it is true, but permanent lifting of the price level is a more basic process.

Reconstruction Finance Corporation Credits and the Inflation

Many officials seem to think that if the Reconstruction Finance Corporation steps out and lends vast sums for a variety of purposes, it is thereby automatically going to inflate credit and prices. What apparently is not realized is that Reconstruction Finance Corporation credits have no inflationary consequence unless there is at the same time a net expansion in loans and investments of member banks. Thus far, such a net expansion is virtually non-existent.

Nor is there any particular reason why it should abruptly appear. Some people are figuring that gold imports and a return flow of Federal Reserve notes will so flood the banks with excess reserves that loans and investments will advance by leaps and bounds. I doubt it. Not that gold inflow and a return of flow of notes is unlikely, but that a broad time factor is to be allowed for if the results are to be orderly and lasting.

There is danger of being too frantic about changing the price trend. I do not advocate inflation and never have. To arrest the deflation by a courageous Federal Reserve policy is one thing. To launch a speculative inflation is quite another.

I should like to see the exact means by which mass consumer buying power is going to be enhanced during the next six months before becoming too credulous about an inflation bandwagon.

The Autumn Bulge in Business

Word seems to have been passed out that after Labor Day business is going to be shot ahead. Now, business is entitled to some seasonal upturn in September and October as a perfectly normal occurrence. Perhaps organized effort can create a little more than the usual seasonal this year.

But the notion that an "avalanche of business" is to be set going by autumn needs to be taken with a grain of salt. A mushroom speculative splurge in business may possibly be engendered, but another disappointment after a rapturous ballyhoo wave might leave the country worse off than before.

Meantime, we are evading receiverships without scaling down fixed charges. We are keeping up the appearance of dividends even though companies are heavily in the red. We are trying to change basic psychology by giving equities a violent speculative whirl. We are having an inflation talked up and ballyhooed by interests who pose as the defenders of sound money. We are being led to expect the quick revival of world trade even though the tariff barriers to trade are to remain as high as ever.

There is something exciting about the new super-drive to produce recovery within three months. No one can object to the determination to war against the depression. But, before swallowing the new propaganda completely, many people will want to study each step taken for what it is worth and for its bearing upon the more fundamental factors of recovery.

It is appropriate, as pointed out in these columns two weeks ago, to adopt a more hopeful view of the economic outlook, because of basic betterment in the financial situation. This increased optimism is not inconsistent with warnings against a merry-go-round type of movement now.

"Stub" taps made by the Greenfield Tap & Die Corpn., Greenfield, Mass., are now available with a square on the end, instead of with plain round shanks, to adapt them for use on all automatic tapping machines. Stub taps are supplied in machine screw sizes and are designed primarily for tapping thin metals. They have a short thread section and taper flutes, which, for through tapping, is said to provide unusual rigidity and strength.

Railroads Individually Will Consider Loans for Repairs

No Collective Action Taken by Association of Railway Executives, But Some Roads May Act

AT a meeting of the Association of Railway Executives in New York on Aug. 10 the proposal of the Federal Administration that the railroads borrow from the Reconstruction Finance Corporation for the repair of rolling stock was given careful consideration. Some roads are opposed to the plan because it would increase their interest charges, although the railroads have been told that interest charges could be deferred until the equipment repaired through the use of loans has been placed in service.

Following the meeting of the Association of Railway Executives, the Pennsylvania Railroad announced it would apply to the Reconstruction Finance Corporation for a loan of $2,000,000 for the construction of 1500 all-steel box cars, which will require about 19,000 tons of steel and give employment to 1400 men. W. W. Atterbury, president of the railroad, made the following announcement:

The directors of the Pennsylvania Railroad have authorized the making of an application to the Reconstruction Finance Corporation for a work loan of $2,000,000 to construct 1500 all-steel box cars of 100,000 pounds capacity. The purpose of this loan is to increase employment and stimulate business.

The construction of these cars would give employment at the Pennsylvania Railroad shops to about 700 men for almost a half year, which will cover this fall and winter. In addition, it will give about an equal amount of employment to other outside shops and industries to furnish about 19,000 tons of steel for the new cars and to manufacture the various specialties fully to equip the cars. The company will promptly take up the subject with the Reconstruction Finance Corporation so that, if the loan can be obtained on satisfactory terms, work may begin as soon as possible.

Several other roads are understood to be ready to apply for loans. No collective action was taken, the matter being left to each individual road to consider and to take action. A statement issued after the meeting by R. H. Aishton, president of the American Railway Association, was as follows:

The advisory committee of the Association of Railway Executives met at the Biltmore today and discussed the proposition which had been made that, as a means of increasing employment during the fall and winter months, the railroads of the country consider borrowing from the Reconstruction Finance Corporation money for the purpose of repairing equipment needing repairs and perhaps for the purchase of new equipment. Several interviews had been held by individual railroad executives with officials in Washington on this subject and tentative propositions had been made under which it might be possible for the railroads to act in this respect.

The advisory committee, after full consideration, realizing that the problem was one for decision by each road but that the critical conditions of unemployment were such that grave consideration should be given to the matter, referred the matter to the meeting of member roads held in the afternoon without recommendation, but with a statement that it was so referred in order that each road might give it full consideration in view of all the circumstances and conditions in order to determine whether or not such individual road could make use of funds which might be available through the Reconstruction Finance Corporation.

No official or collective action was taken at the meeting, and the matter is left for the consideration of each member road.

Box Crane Company Sold to Shaw

Manning, Maxwell & Moore, Inc., 100 East Forty-Second Street, New York, has announced the purchase of the Box Crane & Hoist Corpn. of Philadelphia. The transaction has been effected on a cash basis. The Box business will be merged with that of the Shaw Electric Crane Co., a Manning, Maxwell & Moore subsidiary, in the Shaw plant at Muskegon, Mich., and the merged business will operate as the Shaw-Box Crane & Hoist Co. The purchase does not include the Philadelphia land and building occupied by the Box plant.

Robert M. Wason, president, Manning, Maxwell & Moore, Inc., states that the object of the merger is to broaden the line of crane and hoisting equipment produced by the Shaw crane unit. The Shaw company specializes in heavy hoisting units of from 5 to 250 tons, while the Box company has specialized in hand cranes, jib cranes, pillar cranes, power house cranes, ice cranes and a complete line of inexpensive hoists from 500 lb. to 20 tons capacity.

The Box business was founded in 1878. The transaction just completed was occasioned by the recent death of Herman L. Winterer, who was president and principal owner of the company. The Shaw management plans to continue the Box business as a semi-separate manufacturing organization, retaining the executives of the Box company in charge of it. Frank J. Winterer is president, general manager and superintendent of production, and Joseph H. Winterer is secretary of the Box organization. G. A. Mitchell has been made proposal engineer and C. H. Schramm, designing engineer.

Carnegie Steel Awarded Piling for Hoover Dam

WASHINGTON, Aug. 16.—Although underbid by about $6 a ton by the Sheet Piling Corpn., Ltd., New York, importer of German material, the Carnegie Steel Co.'s Washington office has been awarded a contract by the Bureau of Reclamation, Department of the Interior, to supply 290 tons of sheet piling for the Hoover dam. It is the Government policy to make awards to domestic manufacturers where the latter's "excess cost" is not unreasonable.

A low bid also was made by the Sheet Piling Corpn. to supply about 70 tons of sheet piling for the Bureau of Lighthouses, at Cape Hatteras, N. C., but this award also went to the Washington office of the Carnegie company.

The Sheet Piling Corpn. bid for the Hoover Dam project totaled $11,926, duty paid, f.o.b. San Pedro, Calif. The freight to Boulder City, Nev., site of the dam, would be approximately $2,500, or about $1,700 less than the freight from the plants of any of the four American bidders.

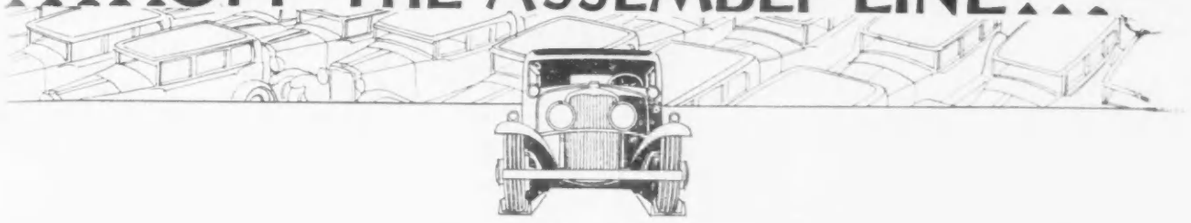
British Iron and Steel Output Lower in July

LONDON, ENGLAND, Aug. 12 (*By Cable*).—Production of pig and steel ingots in the United Kingdom declined in July. Pig iron output was 292,600 tons, against 311,400 tons in June, while steel ingot output was 430,300 tons, compared with 459,300 tons in June. Monthly totals for all of 1931 and the seven months of this year follow:

	Pig Iron	Steel Ingots
1931		
Jan.	337,200	402,200
Feb.	318,200	486,400
March	357,100	500,100
April	323,200	397,400
May	346,500	435,100
June	323,800	428,900
July	317,000	428,700
Aug.	275,700	375,300
Sept.	248,200	400,500
Oct.	284,200	457,400
Nov.	296,400	459,200
Dec.	330,600	422,400
	3,758,100	5,193,600
1932		
Jan.	332,400	429,700
Feb.	318,100	480,600
March	335,600	462,800
April	316,900	433,300
May	315,300	416,900
June	311,400	459,300
July	292,600	430,300

Wheeling Steel Corpn., Wheeling, W. Va., has made application to United States Engineer Office for permission to construct new coke handling plant, with hoists, conveyors and other equipment on Ohio River at New Boston, near Portsmouth, Ohio.

....OFF THE ASSEMBLY LINE...



Motor Car Output Declines Sharply with Closing of Ford Plant

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DETROIT, Aug. 15.

WITH the closing of the Rouge plant of the Ford Motor Co. last Thursday evening until Sept. 6, production in the automobile industry dropped to the lowest point of the year. Early estimates of July production had put the figure around 150,000 units, but drastic curtailments in operating schedules by the Ford company as well as by other makers as the month advanced reduced the total to 112,600 cars, a decline of 41 per cent from June. The progressive downward movement in recent weeks has not yet been arrested, and August promises to reveal a new low for the depression period.

During the shutdown at Dearborn several thousand men will continue at work, but for all practical manufacturing purposes production will be suspended. The inactivity does not extend to any of Ford's 35 domestic branch assembly plants, including the one at Rouge, all of which will assemble cars to conform to retail demand. It is believed that Ford already has turned out about 225,000 of the new fours and V-eights, and parts for 75,000 cars are now on hand at branch assembly plants. Releases already have been given to certain parts makers for delivery of orders on Sept. 6, so that resumption of manufacture at Dearborn at that time seems assured.

Ford's Rouge plant closed on Aug. 11 until Sept. 6. Branch assembly plants, with parts on hand for about 75,000 cars, will remain open.

* * *

No Ford steel releases are expected until early next month. A real pickup in steel buying by motor car companies is not anticipated until late in September.

* * *

General Motors plants will not start production on new models until about Oct. 15.

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No Ford Steel Buying This Month

The sudden closing of the Rouge plant takes away temporarily the last vestige of real business for the steel people in the automobile industry. Ford's steel commitments for this month's delivery have been held up in many cases and mills do not look for releases until early in September. This means, of course, that there will be no Ford steel buy this month and probably only a light one next month. In announcing that its manufacturing equipment would be idle for the next three weeks, Ford officials emphasized that they still intend to carry out the production program for 1932 made public early this year. There are many reports to the effect that Ford shortly will join the remainder of the industry in making yearly model changes, but it can definitely be stated that no decision of this kind has been made. That there will be changes and improvements in the present cars as service conditions reveal their desirability stands to reason. This was the case with model A. However, this is scarcely justification for the prediction heard around Detroit of major changes at the beginning of 1933.

Chevrolet Maintaining Production

On Aug. 1 the Chevrolet gray iron foundry at Saginaw had to produce 30,000 more cylinder blocks for the present model in the ensuing seven weeks, thus running the output on the 1932 car up to the middle of September. It is expected that whatever foundry changes are to be made for the new car will cause a shutdown of only a week to 10 days, so that casting of blocks for the 1933 series will start not later than Oct. 1 and car manufacturing activities should be under way by Oct. 15. This may presage a November announcement as against a December showing last year. The local gear and axle plants of Chevrolet are operating about two days a week and the Flint plant will still be working on the present car for another 30 days.

Buick, Pontiac, Oldsmobile and possibly Cadillac are all scheduled to begin production of next year's models about Oct. 15. Meanwhile they are virtually closed and are devoting their time, aside from development work, to cleaning up all inventories so that even now they have scarcely a pound of steel left in stock. Pontiac, which now has a V-eight inherited from Oakland, is planning on abandoning it at the end of the year in favor of a straight eight, the cylinder blocks for which will be made at the Chevrolet foundry at Saginaw. Chrysler is preparing for extensive changes and is said to have 16,000 cars of a revamped model of one of its subsidiaries scheduled for September production. Plymouth assemblies have declined sharply this month. Other makers, including Willys-Overland, are getting ready to bring out new models of light cars this fall. However, unless there is an unexpected turn for the better, the steel trade is not looking for a real pick-up in orders from motor car companies until late in September.

Expenditures for new equipment during the motor industry's tooling up process this fall will be extremely light. Production men are busy now figuring out ways and means whereby present tools and machinery can be made to serve the necessary purposes without resorting to major purchases. This is not cheering news for the machine tool people, but the automobile industry just now finds itself in a position where it must conserve its resources.

Detroit Notes

Chevrolet's gray iron foundry at Saginaw already has received several shipments of pig iron by water from Buffalo in the stocking up process to

meet next winter's needs. It is figuring its requirements conservatively, preferring to be caught short by an improvement in its business beyond its forecast rather than have a carryover as large as the one this year. . . . For the fifth consecutive month, General Motors' sales to consumers in July exceeded those to dealers, showing that production for some time has been conservative. . . . Bendix has announced perfection of an automatic gear shift transmission for automobiles which eliminates manual shifting. . . . Figures released by Chevrolet show that the coach, weighing 2665.1 lb., contains 492 lb. of malleable and gray iron castings and 1606 lb. of steel. . . . Chevrolet made more fleet sales in the first six months of this year than in the entire year of 1929 and increased its fleet business in that period 13.7 per cent, compared with the corresponding period last year. In the first half it titled 215,811 passenger and commercial cars, or 32.9 per cent of the total, the largest percentage of the country's aggregate business it ever obtained. . . . Some manufacturers are being driven reluctantly to offer new models this fall rather than at the end of the year to save their dealer organizations from complete disruption. . . . Twenty-eight Detroit manufacturers queried recently by the local Board of Commerce reported an improvement in business sentiment.

Steel Institute Applies for Higher Duty on Shapes

WASHINGTON, Aug. 16.—The American Iron and Steel Institute's application for an increase in the duty on structural shapes was announced last Thursday by the Tariff Commission. It is understood that the institute is seeking an increase of 50 per cent in the duty which, if granted, would raise it to 30c. from 20c. per 100 lb., though in the tariff act it is fixed on a pound basis at 1/5c. per lb.

Imports of structural shapes from Belgium have been particularly heavy and at prices which are much below the American cost. The increased duty, it is declared, would be insufficient to check incoming shipments to any great extent.

Imports in the first six months of the current year totaled 17,339 tons, against 37,155 tons in the corresponding period of last year. Exports of both plain and fabricated structural shapes in the first half of the current year totaled 18,039 tons, against 76,426 tons in the first six months of 1931.

The Tariff Commission has not as yet assigned a date for hearing on the application of the institute, but will begin an inquiry into costs and other facts.

Suspended Projects Total $1,402,621,920

The American Society of Civil Engineers, through its committee on public works, has assembled a list of public works which are reported as suspended through lack of financing at reasonable rates of interest. This information, which has been gathered from sources considered reliable, shows a total of $1,402,621,920 for projects "reported as ready" and $893,925,700 for "reported projects." It is added that the majority of these projects are believed to be self-liquidating or could be made so by local legislative action.

To Make and Sell Packs for Shipment of Sheets

The Stevenson Co., machinery manufacturer, Wellsville, Ohio, has become affiliated with Material Handling, Inc., also of Wellsville, both companies having been licensed by the American Rolling Mill Co. to manufacture and sell apparatus covered by the 10 Romine patents acquired by "Armco" relating especially to shipping of sheet metal in "floating packs," sometimes called the "unit load method." Material Handling, Inc., will handle the sales and service in this arrangement with the Stevenson Co.

This method of shipment is used to preserve the highly polished surface of the sheets, and also to prevent the knocking out of the ends of the freight cars by the shifting of heavy bundles of steel sheets while in transit. The Stevenson Co. and Material Handling, Inc., also operate under nearly 100 additional patents of Romine which are not included in the American Rolling Mill Co. arrangement.

In addition to these two advantages, the sheets can be handled in packs of 10 tons, more or less, instead of one sheet at a time by hand, greatly reducing the cost of loading and unloading. The packs of metal sheets are handled in and out of the railroad cars by stack lifters, or by portable cranes in the case of open cars, and carried by special electric trucks to the machine that processes the metal, or else left in storage as a unit pack until wanted for use.

Under the Romine truck patents which are used in connection with these shipments, Material Handling, Inc., has licensed the Elwell-Parker Co. and the Baker-Raulang Co., Cleveland, as sources of supply for such trucks. Licenses have already been granted under some of the patents to the Western Electric Co. and the Hudson Motor Car Co.

It is understood that a number of the leading steel mills have been licensed to practice the methods of shipment under the 10 Romine patents assigned to the American Rolling Mill Co.

Soviet Union May Float Loan for Purchases

Plans for financing an internal loan through the sale of the 10-year bonds to foreign investors are reported in progress by the Soviet Union. Because of the economic crisis abroad, the Soviet Government will offer the loan at 10 per cent interest, redeeming the bonds upon demand at face value plus interest accrued in any foreign country at unfluctuated gold standard.

Direct solicitation of purchasers in the United States is not likely because of objections that might arise at Washington. Under supervision of American financial experts, however, a plan has been conceived to surmount this obstacle by distributing the bonds through correspondent banks throughout the world after funds have been forwarded to the Russian Central Bank at Moscow by the correspondents.

The extent of the loan has not yet been announced. In view of its international aspect, however, the plan is expected to give impetus to Soviet world trade. Its potential advantages with respect to American-Soviet commerce cannot yet be gaged, but it is conceded that, provided the bonds meet with favor here, some of the American business that has been lost to European nations may be regained.

Trackwork Shipments at Extreme Low

Shipments of trackwork for T-rail track of 60 lb. per yd. and heavier declined in July to 1890 tons from 1975 tons in June, according to the monthly report of the American Iron and Steel Institute. Total shipments in the first seven months of this year were 10,266 tons, compared with 26,131 tons in the corresponding period of 1931.

The total for the year thus far shows the small amount of railroad maintenance work that is being done. Annual production in preceding years was as follows: 1924, 153,376 tons; 1925, 171,115 tons; 1926, 197,005 tons; 1927, 160,631 tons; 1928, 139,645 tons; 1929, 162,115 tons; 1930, 110,116 tons and 1931, 60,901 tons.

... PERSONALS ...

J. W. SPEER, formerly manager of machinery electrification for the Westinghouse Electric & Mfg. Co., East Pittsburgh, has been appointed manager of commercial air-conditioning products, diversified products department, and will have charge of commercial and air-conditioning apparatus. R. C. COSGROVE, manager of the refrigeration department, will head domestic sales of air-conditioning products, and W. C. GOODWIN, with the supply engineering department, will have charge of engineering and development. These changes are in line with the coordination of the company's activities in the air-conditioning field, as announced recently by J. S. TRITLE, vice-president and general manager of the company.

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PAUL W. COTTON has been appointed general manager of sales by the Pacific Coast Steel Corpn., San Francisco. He has been for many years an executive of the Pacific Coast company, both before and since its acquisition as a subsidiary of the Bethlehem Steel Corpn. For a number of years Mr. Cotton has been in Seattle, in general charge of the Pacific Northwest, and his advancement will cause his removal to the San Francisco office and place him in executive responsibility directly under W. H. STEWART, president of the company.

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EDWARD S. CHAMBERLAIN, who has been engaged in selling machine tools in the metropolitan territory since 1919, in recent years with the Van Dyck Churchill Co., New York, has opened an office at 39 Cortlandt Street, New York. He represents Charles H. Besly & Co., Chicago; Barrett Machine Tool Co., Meadville, Pa.; Fosdick Machine Tool Co. and Bradford Machine Tool Co., both of Cincinnati.

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R. H. CUNNINGHAM, formerly identified with the Ingersoll-Rand Co. at New York and at Birmingham, has become connected with the Union Steel Castings Co., Pittsburgh, in the railroad sales department.

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R. F. WISE and THOMAS G. WENNER, both formerly of the Sheffield Steel Corpn., Kansas City, Mo., have been appointed general superintendent and superintendent of the 10- and 16-in. mills of the Tulsa Steel Co., Sand Springs, Okla. M. H. GRABEIN, who was identified with the Texas Steel Co., Fort Worth, Tex., has been made superintendent of the mechanical and electrical departments of the Tulsa company, and W. J. HAMIL has become chief engineer.

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HENRY F. DEVENS, president of the Oliver Iron & Steel Corpn., Pittsburgh, has been elected a director of the Brainard Steel Corpn., Warren, Ohio, to fill the vacancy caused by the death of D. J. McLaughlin.

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L. F. MCKAY, for seven years identified with the American Flange & Mfg. Co., Chicago, has been appointed assistant to the president and in charge of package engineering of the Wackman Welded Ware Co., St. Louis, Mo.

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RALPH P. LAPORTE, formerly of the executive staff of the E. G. Budd Mfg. Co., Philadelphia, has been appointed manager of manufacture of the International Heater Co., Utica, N. Y.

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D. C. SELHEIMER, supervisor of tractor and implement manufacturing, Massey-Harris Co., Racine, Wis.,

Joseph T. Ryerson & Son, Inc., Celebrates Its Ninetieth Anniversary

JOSEPH T. RYERSON & SON, INC., is celebrating its ninetieth anniversary as a going business, though it had its roots on American soil more than two centuries ago. When Joseph Ryerson stepped off a Great Lakes boat at Chicago in 1842 he laid the foundation for the present Ryerson business, but long before that his forefathers had been engaged in the making and selling of iron.

Joris Ryerson landed in this country in 1646, and in 1708 moved to the northern part of New Jersey. Iron ore was discovered on his land. This marked the beginning of the association of the Ryerson name with the iron and steel industry of this country. During the Revolution the Ryerson forges produced cannon and shot for the American forces, and also helped to make the great chain which was used as a barrier across the Hudson River to prevent the advance of the British fleet to West Point.

When Joseph Ryerson reached Chicago, after nine days of travel from Philadelphia, he rented a small building, one of the few available in what was then a town of only 6000 population. A stock of iron products, such as were used by mechanics, builders, boilermakers and other workers in iron and steel, was laid in, and the little store was opened—the beginning of the present Ryerson business, which now embraces 10 warehouses situated in important industrial centers.

A composite view of the 10 warehouses now maintained throughout the country by Joseph T. Ryerson & Son, Inc.

has been promoted to the position of general factory manager, in charge of all production in the United States, including implement plants and gray iron and malleable foundries at Batavia, N. Y. His office will continue to be located in Racine. H. G. TRELAWNEY, who recently resigned as factory manager of the Jaeger Machine Co., Columbus, Ohio, has been engaged as superintendent of the Batavia shops.

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W. H. A. AUSTIN, formerly secretary and New York sales agent of the Eastern Steel Co., has been elected president and a director of the Bergen Point Iron Works, Bayonne, N. J., succeeding the late Thomas H. Alison.

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RALPH L. DUNCKEL, at one time identified with the International Motor Co., has been placed in charge of production and purchasing at the Bridgeport plant of the Kron Co., manufacturer of industrial scales. J. D. YOUNG, formerly of the Chicago sales force of the Wright Mfg. Co., has become affiliated in a sales capacity with the Chicago office of the Kron Co.

OBITUARY

ROBERT H. SPROAT, superintendent of the American Works of the American Steel & Wire Co., Cleveland, died Aug. 10, aged 48 years. He had been connected with the company since leaving school in Pittsburgh, where at the age of 16 he was employed as a stenographer. A few years later he was sent to Cleveland and through various promotions rose to the superintendency of the American Works.

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SAM A. PERKINS, secretary-treasurer and one of the founders of the Waukesha Motor Co., manufacturer of industrial gas engines, Waukesha, Wis., died in a Stevens Point, Wis., hospital on Aug. 15, aged 69 years.

Thomas Spacing Machine Co., Pittsburgh, has received an order from the Amtorg Trading Corpn., New York, for structural steel fabricating equipment, to be installed in a plant now under construction in Russia, which is designed by American engineers. The company will send its own engineers to install and place the machinery in operation, and the order will keep the Thomas plant busy for the remainder of the year.

National Radiator Corpn., Johnstown, Pa., manufacturer of steam and hot water radiators, has been purchased from receivers by a reorganization committee of bondholders, headed by John H. Waters, president. Plans are under way for formation of new company to take over plants and properties, and resume operations at early date.

British Machine Tools May Carry No Canadian Duty

OTTAWA, Aug. 15.—Machine tools and certain other classes of machinery are to be allowed free entry into the Dominion of Canada from the United Kingdom of Great Britain and Ireland and other parts of the British Empire provided they are not of classes or kind made at present in Canada, and provided, of course, concrete agreements result from the Empire Economic Conference now in session here. It has been fairly well established that such preferences are among the proposals of Premier Bennett of Canada.

At the present time machine tools, coming under the heading of machinery not otherwise provided for, pay 15 per cent duty coming from England and 35 per cent coming from the United States and other countries to which the general duty applies. Diesel engines are now dutiable to the extent of 15 per cent when of British manufacture and 30 per cent under the general duty. Motorcycles and motorcycle parts carry a 12½ per cent British preferential duty and a 20 per cent general duty.

Products of aluminum not otherwise provided for are likewise expected to come in free from Great Britain, against a present British preferential duty of 15 per cent and a general duty of 25 per cent.

Conjecture as to what is likely to happen in respect to the tariff on sheets imported into Canada points to a continuance of the present duty structure. Sheets for general use take a 7½ per cent preferential duty when coming from Great Britain and 12½ per cent on both the intermediate and general schedules. When coated with tin or zinc, the preference duty is 7½ per cent, the intermediate 12½ per cent but the general duty 15 per cent. When the sheets are imported for coating in Canada, the preference duty is 5 per cent, the intermediate 7½ and the general duty 10 per cent.

Under the tariff change ordered Aug. 5, shapes or sections for use in the manufacture of hinges come in free from Great Britain, with an intermediate duty of 7½ per cent and the general duty of 10 per cent.

Financial Reports

Allegheny Steel Co. in the six months ended June 30 had net loss, after depreciation, interest, taxes and other charges, of $537,163, compared with net income of $250,460 for the first half of 1931. Net loss in the second quarter, after above charges, was $170,785, compared with deficit of $366,378 in the preceding quarter and loss of $35,172 in the second quarter of 1931.

Pittsburgh Screw & Bolt Corpn. reports net loss in the first half, after depreciation, interest and other charges, of $433,926, compared with deficit of $80,852 for the first six months of last year. Loss in the second quarter, after above deductions, was $183,785, contrasted with losses of $20,141 in the preceding quarter and $84,044 in the second quarter of 1931.

Timken Roller Bearing Co. and subsidiaries operated in the first half at net profit, after depreciation, Federal taxes and other charges, of $417,520, equivalent to 17c. a share, compared with profit of $2,462.714, or $1.02 a share, for the first half of 1931. Net profit in the quarter ended June 30 was $199,903, equal to 8c. a share, against $217,617, or 9c. a share, in the preceding quarter, and $1,148,075, or 48c. a share, for the second quarter of last year.

American Rolling Mill Co. in the six months ended June 30 incurred consolidated net loss, after depreciation, interest, taxes and other charges, of $961,229, against $503,546 loss in the first half of 1931. Loss in the second quarter was $389,312, compared with loss of $571,917 in the preceding quarter and net profit of $159,503, equal after preferred requirements to 7c. a share on common stock, for the second quarter last year. Payment of $250,000 serial 5½ per cent notes due in February and $1,000,000 of such notes due in August substantially decreased the company's current liabilities.

Crucible Steel Co. of America reports an operating loss for the first half of $219,079.67, which, with a loss in non-operating departments of $234,376.88, makes a total loss for the period of $453,456.55. With allowance for repairs and depreciation and bond interest, the total net loss was $1,681,581.02. Dividends of $437,500 were paid on preferred stock. Thus the total amount deducted from surplus was $2,119,081.02. During the first quarter the company had about 26 per cent of normal business; since then orders and production have decreased to the lowest volume of which the company has any record. As of June 30 the company had current assets of $19,125,714, of which $1,317,591 was in cash.

• • EDITORIAL COMMENT • •

Beware of Band Wagons

ON page 263 of this issue, Dr. Lionel D. Edie sounds a timely word of caution relative to overstimulating the recovery pace, particularly through propaganda.

That there has been an upturn during the past few weeks in the demand for certain "consumer" products is probable. That there has been a distinct upturn in sentiment is indisputable. Whether these factors have as yet effected an increase in employment, wages and earnings is still unknown. Sporadic cases of resumption of plant activities are featured in the daily press but do not tell the whole story, since offsetting recessions in activity elsewhere are not brought to light until the delayed overall monthly figures are obtained. The "offs" must be counted with the "ons" to get a true picture.

An amusing case of the lack of dependability of newspaper reports of "resumed" activities has been noted in connection with a large steel producing company which has been alternating operations in its mills for some time because of its desire to "rotate" employment. Each time that it came the turn of one of this company's mills in a certain district an enterprising news reporter related that it had "resumed" activity and was putting several thousand men back to work!

Individual indicators, when accurate, are of interest and value. During the past two weeks, for example, there have been 48 instances of renewed or enlarged employment reported in the "Plant Expansion and Equipment Buying" department of THE IRON AGE. These compare with 21 such reported in the corresponding two weeks period of the previous month. Most of these "high spot" cases have applied to "consumer" goods. As readers of THE IRON AGE are aware, the stimulus has not as yet noticeably percolated to the basic material producers or the machinery builders.

The encouraging thing about the upturn in sentiment in our own industry was its spontaneity. It was not created by ballyhoo. It would indeed be a pity if this very real hope were to be turned into skepticism by the hitching on of too many band wagons in the endeavor to "help things along."

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Electric Steel and The Depression

IT is interesting to note that the depression had not materially slowed up the American electric steel industry up to the end of 1931. An analysis of recently published data of the American Iron and Steel Institute for last year brings out two striking facts bearing on electric steel.

In 1931 the country's ingot and castings production by electric furnaces was 1.58 per cent of the total steel output whereas in 1930 the corresponding figure was 1.50 per cent. Both percentages compare favorably with 1.68 per cent in 1929, a record year. But the surprising expansion has been in electric steel castings. In 1929 the percentage of such castings of the total steel casting production was 26.5 per cent. As the depression deepened the demand for this product increased until in 1930 the proportion was 27.6 per cent, expanding in 1931 to the remarkable figure of 34 per cent, a new record. That over one-third of the output of the American steel foundry industry was made last year in electric furnaces is eloquent testimony to the position which such castings have attained in industry.

What the story will be in 1932 is yet unknown but, judged by the record in the first two years of the depression, the results should be nearly as impressive.

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Ottawa Struggles With Steel

NOTHING that has come out as yet from the Empire Economic Conference still in session at Ottawa alters the conclusion arrived at several weeks ago in these columns that the plan to place more and more British steel into Canada is beset with difficulties. It is not merely that the United States makes what Canada wants and, in the case of several forms, what no other country is equally equipped to supply. It is not merely that the proximity of the American producer gives him intimate knowledge of the needs and unequalled opportunity to adjust any differences. It is not merely that quality, as in tin plate and automobile sheets, is supreme. It is the fact that Canada has good capacity to produce the very kinds of steel Great Britain would like to supply. Perhaps secondary is the necessity for setting up warehousing facilities in various Canadian centers. Yet, not secondary are the low prices of Continental exporters, which, even when the drastic Canadian dumping duty applies, undercut British prices. British producers cannot expect bonuses for selling to Canada, the steel trade is distinct from that of Canadian food and lumber shippers, who are seeking British markets, and Empire sentiment cannot long remain a telling factor when other things are not equal.

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Qualifying Welders

FOR years there has been a great deal of talk and comparatively little action on the question of qualifying welders. The American Welding Society has urged engineering schools to cooperate in a nation-wide movement for a standard certification of welders. The plan would be to have examining stations located in nearly all industrial districts. Usually these stations will be at some well-established commercial laboratory or at the laboratory of an engineering or trade school, and the charge for testing a welder will be held to a minimum. Welders who qualified under this standard plan would receive a certifying card, which would be recognized throughout the country. Some such stations have already been opened up, but the nation-wide plan which is much needed seems slow to get under way. It is encouraging to learn that the Welding Contractors Association of New York now requires that its members have their welders qualify by test.

Lamont Well Qualified for Leader of Steel Industry

His Washington Experience, Together with Industrial Background, Will Serve Him Well in New Position

BY L. W. MOFFETT

WASHINGTON, Aug. 16.—Long distinguished leadership in the industrial world is held to qualify Ralph Patterson Lamont as president of the American Iron and Steel Institute. Added to that, however, Mr. Lamont's experience as Secretary of Commerce no doubt will avail him much as a promoter of the interests of the iron and steel industry.

He has gained a clear insight into the proper relationship between industry and the Government. As a key man in the Hoover Administration for three years and four months, Mr. Lamont took a leading part in guiding business, both export and domestic, through a most trying period and saw what the Government could do for industry, how far it could and should go. Strongly opposed to undue Government interference with business, Mr. Lamont nevertheless was equally as vigorous in defending Governmental functions, especially those of his own department.

Never Quarreled with Congress

Yet with these qualifications, Mr. Lamont has another which gave him a unique standing as a cabinet member. For Mr. Lamont went away with the unusual record of never having quarreled with Congress! It is a subject about which Washington will talk for a long time. Seldom does a man serve in the Cabinet long without getting tangled up in one way or other with Congress or members of it. So Mr. Lamont, at least, will not be known by the enemies he made. He made none. At the same time he was highly respected and always maintained a firmness of attitude when he wanted anything from Congress or other sources.

Reduced to a simple term, Mr. Lamont has a temperament that goes with a man who is cool, even under pressure, is logical and always desires to hear both sides of a case before passing upon it. He realizes that the other fellow is entitled to his own views and that they deserve consideration. Once his mind is made up, however, Mr. Lamont pushes ahead according to his own conviction. He is the type that makes a good arbiter and has a vision that the steel or any other industry may well use.

Perhaps the first impression one gets of Mr. Lamont is that of sternness. It fades away after Mr. Lamont is known. For he has a real sense of humor. Formalities are recognized by him when they are in place. On the other hand, his serious thoughts are readily cast off when they are of no service and can be supplanted with a quip. Many of the Lamont talks with the press were sprinkled with humorous remarks, made especially sharp because of their spontaneity.

The latest was on the occasion of his final departure last week from a Cabinet meeting. Mr. Lamont attended only as a "guest," an unusual thing in itself, and even though he could not speak as a Government official, he was said to have "batted" for his successor, Roy Dikeman Chapin, who got tied up in a conference and was unable to be present at the first Cabinet meeting after he took office.

Almost Forgot Cabinet Chair

Mr. Lamont, never talkative, emerged from the Cabinet session, a smile on his face as the press correspondents began to surround him as a sort of a godspeed gesture. A quizz obviously was necessary.

"Well, Colonel Lamont," one correspondent inquired, "where is your old cabinet chair?"

"Gee, I forgot all about it" Mr. Lamont exclaimed in feigned alarm. And turned back to give orders that the chair be sent to him, for tradition has it that outgoing members of the Cabinet are entitled to take the chairs they occupied.

It was the work of Mr. Lamont as head of the Flood Control Committee of the Chamber of Commerce of the United States which attracted the particular attention of Mr. Hoover, then Secretary of Commerce. Mr. Lamont and his committee in 1927 made a study of the devastated regions in the Mississippi Valley and returned to Washington to prepare a report with recommendations. The committee called upon Mr. Hoover, who had also traveled over the flooded region and given much thought to the engineering features, looking to a solution of the situation. Mr. Lamont explained to Mr. Hoover what the committee had done and pointed out that it had recommended that the flood problem be treated as a national undertaking, to be wholly financed by the Federal Government. The suggestion accorded with the views of Mr. Hoover and was adopted by Congress. The meeting of the two engineering minds on this occasion has been given as the reason Mr. Hoover turned over his old portfolio as Secretary of Commerce to Mr. Lamont when the former became President.

Mr. Lamont, as a member of the Chamber of Commerce of the United States, was a strong advocate of sharp reduction in Federal expenditures and appeared before committees in Congress urging heavy slashes in taxes. In doing so he came into sharp conflict with the views of President Coolidge and Secretary of the Treasury Mellon. Mr. Lamont had especially urged a cut of 10 per cent in the corporation tax. It was the contention of Mr. Lamont that the tax on corporations was onerous and that it could not always be passed on. He explained that prices are determined by market conditions and by competition. The manufacturer and the corporation generally, he declared, are getting what profits they can, if they get any, in competition.

Believes Government Should Keep Out of Business

Mr. Lamont's experience as Secretary of Commerce has not changed his view that the Government should stay out of business as much as possible. The fact that circumstances have forced the Federal Government into business, finance and railroading, etc., at present to an extent never before approached no doubt is passed by as only a temporary expedient pending the pull out of the depression.

Soon after he took office as Secretary of Commerce, Mr. Lamont was asked how the Federal Government could best assist business.

"By keeping out of it so far as possible," he replied.

He expressed the view that business can do its own reforming. And it can do it best, he said, without pressure from the Government. Fully 95 per cent of American business is clean, Mr. Lamont declared. The biggest problem before American business was said to be the cleaning up of the remaining 5 per cent, much of which was said to consist of men trying to create "nuisance value."

Mr. Lamont has left the Department of Commerce in the well-organized form in which it was built by Mr. Hoover. Like Mr. Hoover also he was a strong defender of the department and its work for business. He has always been quick to serve business through his department, but equally as quick to resent attacks on it. His service in the Hoover Cabinet took in a wide range, for Mr. Hoover entrusted him with many duties that were not strictly confined to his position as head of a department. He began as the head of the Committee on Unemployment and after it was well under way and enlarged it was turned over to others. His many other contacts disclosed the confidence placed in him by the President.

SUMMARY OF THE WEEK'S BUSINESS

Railroad Equipment and Building Work Appear More Promising Aids for Steel

Ingot Output Holds at 14 Per Cent, Some Miscellaneous Buying Partly Offsetting Losses Resulting From Automobile Curtailment

ENCOURAGING signs of prospective business improvement are not lacking, though steel ingot output has not risen above 14 per cent of the country's capacity. Engagement of steel-making facilities in the Valleys and at Cleveland and Detroit has been particularly affected by the shutting down of the Ford automobile plant until Sept. 6, but losses in those districts have been offset by an increase in Chicago to 13 per cent against a recent rate of less than 10 per cent. The Detroit capacity, which attained a maximum production of about 80 per cent in the second quarter, is now down to 13 per cent, all of the Ford open-hearth furnaces, as well as the automobile manufacturing equipment, being idle.

The slowing down in the automobile industry, including the Ford suspension, has come at a time when expected seasonal expansion in requirements of other consuming lines has scarcely begun to assert itself. However, at Chicago the steel orders from miscellaneous sources have taken up the slack caused by smaller releases from the automobile industry. July output of motor cars was 112,600 units, a decline of 41 per cent from June, and it is indicated that the August total will be the lowest of the year thus far. No important resumption of steel buying by automobile manufacturers is expected until September. The General Motors Corpn. will not begin work on contemplated new models until Oct. 15.

ON the brighter side can be recorded a noticeable gain in demand for pig iron, including a number of inquiries of fairly good size for fourth quarter delivery, continuing strength in scrap markets, the resumption of steel buying on a small scale by many manufacturers whose plants have been wholly or partially shut down during recent weeks, and seasonal orders and inquiries from consumers whose business normally expands in the fall, such as stove and furnace makers. Steel furniture manufacturers are having a sizable pick-up in orders because of requirements for the many Government buildings now nearing completion.

Efforts of the Washington Administration to stimulate business activity through loans by the Reconstruction Finance Corporation for railroad equipment rehabilitation and building construction are adding to the confidence of the steel industry that there will eventually be a marked increase in its bookings, though it is clearly recognized that many projects will require considerable time, perhaps months, before mills will actually be rolling the steel.

ALTHOUGH the application of the Pennsylvania Railroad for a loan to build 1500 steel box cars in its own shops is the only concrete development in the proposed railroad equipment program, negotiations by some other roads are expected shortly. In probable anticipation of some railroad buying, the Railway Steel Spring Co. has inquired for 3000 tons of low phosphorus pig iron for fourth quarter, the largest inquiry for this grade in a long period. Several roads are expected to undertake extensive car repairs within 60 days. Car builders are confident that much equipment will be found to be not worth repairing; hence new car purchases may eventuate this fall or early next year.

Application will be made immediately for Reconstruction Finance Corporation loans for the construction of two large bridges at San Francisco, which together will take about 247,000 tons of steel, including cables, and cost $110,000,000. The newer project, the Transbay bridge, for which a call for bids will be issued soon, requires 115,850 tons of fabricated structural material and 23,666 tons of other iron and steel, while the Golden Gate bridge, which was tentatively awarded a year ago and held up because of litigation and lack of financing, will take 107,000 tons of steel. Whether former contracts shall be carried out or new bids requested has not been determined. Including the Transbay bridge, structural steel projects of 126,300 tons have been added to pending work, the largest total for a single week since April, 1931. Structural steel lettings were 12,800 tons.

SCRAP markets have gained strength in virtually all centers, resulting in a further increase in THE IRON AGE composite price for heavy melting steel to $6.92, the highest since early June and a gain of 50c. a ton from the year's low of early July, but pig iron has weakened at Philadelphia, being down 50c. a ton, largely because of foreign competition, which may result in the filing of a complaint at Washington for alleged violation of the anti-dumping provision of the Tariff Act. Incidentally, this week's London cable to THE IRON AGE reports the granting of a subsidy by the Netherlands Government to the Royal Dutch interest, which has been one of the largest shippers of pig iron to the United States. The money is to be used for construction of rolling mills and a cast iron pipe plant.

Recent weakness in prices of galvanized sheets has been largely overcome, most mills again quoting 2.85c. a lb., Pittsburgh. Concessions of $2 a ton have been granted to some large buyers of No. 24 hot-rolled annealed sheets.

THE IRON AGE pig iron composite price has declined to $13.64, the lowest since August, 1915. Finished steel is unchanged at 1.976c. a lb.

▲▲▲ A Comparison of Prices ▲▲▲

Market Prices at Date, and One Week, One Month and One Year Previous, Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

	Aug. 16, 1932	Aug. 9, 1932	July 19, 1932	Aug. 18, 1931
Per Gross Ton:				
No. 2 fdy., Philadelphia	*$13.84*	$14.34	$14.34	$16.76
No. 2, Valley furnace	14.50	14.50	14.50	17.00
No. 2 Southern, Cin'ti	13.82	13.82	13.82	14.69
No. 2, Birmingham	11.00	11.00	11.00	12.00
No. 2 foundry, Chicago*	15.50	15.50	15.50	17.50
Basic, del'd eastern Pa.	*14.00*	14.50	14.50	16.75
Basic, Valley furnace	13.50	13.50	13.50	15.50
Valley Bessemer, del'd P'gh	16.89	16.89	16.89	18.76
Malleable, Chicago*	15.50	15.50	15.50	17.50
Malleable, Valley	14.50	14.50	14.50	17.00
L. S. charcoal, Chicago	23.17	23.17	23.17	25.04
Ferromanganese, seab'd carlots	68.00	68.00	68.00	85.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

Rails, Billets, etc.

Per Gross Ton:				
Rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Light rails at mill	32.00	32.00	32.00	34.00
Rerolling billets, Pittsburgh	26.00	26.00	26.00	29.00
Sheet bars, Pittsburgh	26.00	26.00	26.00	29.00
Slabs, Pittsburgh	26.00	26.00	26.00	29.00
Forging billets, Pittsburgh	33.00	33.00	33.00	35.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	....	....	1.60	1.60

Finished Steel

	Cents	Cents	Cents	Cents
Per Lb. to Large Buyers:				
Bars, Pittsburgh	1.60	1.60	1.60	1.60
Bars, Chicago	1.70	1.70	1.70	1.70
Bars, Cleveland	1.65	1.65	1.65	1.65
Bars, New York	1.95	1.95	1.95	1.93
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Chicago	1.70	1.70	1.70	1.70
Tank plates, New York	1.898	1.898	1.898	1.88
Structural shapes, Pittsburgh	1.60	1.60	1.60	1.60
Structural shapes, Chicago	1.70	1.70	1.70	1.70
Structural shapes, New York	1.86775	1.86775	1.86775	1.85½
Cold-finished bars, P'gh	1.70	1.70	1.70	2.10
Hot-rolled strips, Pittsburgh	1.45	1.45	1.45	1.55
Cold-rolled strips, Pittsburgh	2.00	2.00	2.00	2.15

Finished Steel

	Aug. 16, 1932	Aug. 9, 1932	July 19, 1932	Aug. 18, 1931
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Hot-rolled annealed sheets, No. 24, Pittsburgh	2.20	2.20	2.20	2.40
Hot-rolled annealed sheets, No. 24, Chicago dist. mill	2.30	2.30	2.30	2.50
Sheets, galv., No. 24, P'gh	2.85	2.85	2.85	2.90
Sheets, galv., No. 24, Chicago dist. mill	2.95	2.95	2.95	3.00
Hot-rolled sheets, No. 10, P'gh	1.55	1.55	1.55	1.70
Hot-rolled sheets, No. 10, Chicago dist. mill	1.65	1.65	1.65	1.80
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Wire nails, Chicago dist. mill	2.00	2.00	2.00	1.95
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Plain wire, Chicago dist. mill	2.25	2.25	2.25	2.25
Barbed wire, galv., P'gh	2.60	2.60	2.60	2.55
Barbed wire, galv., Chicago dist. mill	2.65	2.65	2.65	2.60
Tin plate, 100 lb. box, P'gh	$4.75	$4.75	$4.75	$5.00

Old Material

Per Gross Ton:				
Heavy melting steel, P'gh	$8.50	$8.50	$8.25	$10.75
Heavy melting steel, Phila.	**6.50**	6.25	6.25	8.75
Heavy melting steel, Ch'go	5.75	5.75	4.75	8.25
Carwheels, Chicago	6.00	6.00	5.50	9.50
Carwheels, Philadelphia	8.50	8.50	8.00	12.00
No. 1 cast, Pittsburgh	9.50	9.50	9.50	11.00
No. 1 cast, Philadelphia	8.00	8.00	8.00	11.50
No. 1 cast, Ch'go (net ton)	6.00	6.00	6.00	9.00
No. 1 RR. wrot., Phila.	8.50	8.50	8.50	10.00
No. 1 RR. wrot., Ch'go (net)	3.75	3.75	3.75	7.00

Coke, Connellsville

Per Net Ton at Oven:				
Furnace coke, prompt	$2.00	$2.00	$2.00	$2.40
Foundry coke, prompt	3.00	3.00	3.00	3.50

Metals

	Cents	Cents	Cents	Cents
Per Lb. to Large Buyers:				
Lake copper, New York	*5.50*	5.62½	5.37½	7.87½
Electrolytic copper, refinery	*5.12½*	5.25	5.00	7.25
Tin (Straits), New York	**23.30**	22.65	20.80	25.70
Zinc, East St. Louis	*2.75*	2.80	2.50	3.80
Zinc, New York	*3.12*	3.17	2.87	4.15
Lead, St. Louis	**3.05**	2.95	2.50	4.22½
Lead, New York	**3.20**	3.10	2.65	4.40
Antimony (Asiatic), N. Y.	5.00	5.00	5.00	6.60

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

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▲▲▲ The Iron Age Composite Prices ▲▲▲

	Finished Steel	Pig Iron	Steel Scrap
Aug. 16, 1932	1.976c. a Lb.	$13.64 a Gross Ton	$6.92 a Gross Ton
One week ago	1.976c.	13.76	6.83
One month ago	1.976c.	13.76	6.42
One year ago	2.014c.	15.50	9.25
	Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products make 85 per cent of the United States output.	Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	Finished Steel		Pig Iron		Steel Scrap	
	High	Low	High	Low	High	Low
1932	1.976c., June 28	1.926c., Feb. 2	$14.81, Jan. 5	$13.64, Aug. 16	$8.50, Jan. 12	$6.42, July 5
1931	2.037c., Jan. 13	1.945c., Dec. 29	15.90, Jan. 6	14.79, Dec. 15	11.33, Jan. 6	8.50, Dec. 29
1930	2.273c., Jan. 7	2.018c., Dec. 9	18.21, Jan. 7	15.90, Dec. 16	15.00, Feb. 18	11.25, Dec. 9
1929	2.317c., April 2	2.273c., Oct. 29	18.71, May 14	18.21, Dec. 17	17.58, Jan. 29	14.08, Dec. 3
1928	2.286c., Dec. 11	2.217c., July 17	18.59, Nov. 27	17.04, July 24	16.50, Dec. 31	13.08, July 2
1927	2.402c., Jan. 4	2.212c., Nov. 1	19.71, Jan. 4	17.54, Nov. 1	15.25, Jan. 11	13.08, Nov. 22

Pittsburgh Steel Orders Gain in Some Products but Aggregate Is No Larger

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Minor gains in orders for some steel products reported, but aggregate tonnage has not increased.

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Ingot output in Pittsburgh and Wheeling districts unchanged, but lower in the Valleys.

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Hot-rolled annealed and galvanized sheets show some weakness.

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Scrap market strong, with several price advances.

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PITTSBURGH, Aug. 16.—A moderate improvement in demand for some forms of finished steel products is reported in this district. However, no marked change in aggregate demand can be reported. Recent declines in orders for tin plate, sheets and strip steel seem to have been checked, and it now seems likely that any upward trend in releases between now and the first of September will be reflected immediately in production schedules.

It is believed in some quarters that mills are deliberately allowing orders to accumulate preparatory to increased schedules immediately after Labor Day, but the recent character of demand has been such that it would be difficult to postpone shipments to small consumers. It is possible that large building projects and purchases by the railroads and other large industries might easily be deferred until some definite date.

Structural steel inquiry is again improving, and awards are holding their own. Reinforcing bar shipments this month are running ahead of those of July. On most other steel products August is likely to be a poorer month than its predecessor.

The automobile industry is engaged at the lowest rate of the year, but August sales of cars have been ahead of expectations, and improved production schedules are indicated for the latter half of September.

Negotiations for new equipment loans are being carried on by the railroads, but the only concrete development has been the application of the Pennsylvania to borrow funds from the Reconstruction Finance Corporation for the building of 1500 freight cars.

Small miscellaneous orders for steel products are increasing, but in number rather than volume.

Steel ingot production in the district continues at about 15 per cent of capacity. One large independent company has been maintaining a slightly better rate in the last week or two, thus offsetting the suspension of activity in the district rail plant. Valley production, however, has fallen to about 12 per cent, reflecting the absence of automobile tonnage. The Wheeling district continues at about 25 per cent. Finishing mill schedules show no important changes, with tin plate holding its own and sheet production slightly heavier.

The price structure is holding on the majority of products, although galvanized and hot-rolled annealed sheets are noticeably weak in some districts. New buying is hardly sufficient to establish lower quotations, and in some instances concessions have been withdrawn.

The scrap market continues strong, although mills have not been forced to duplicate last week's $9 price in recent purchases of No. 1 heavy melting steel.

Pig Iron

The foundry melt in this district has shown no change thus far in the month, and shipments are running at about the same rate as in July. New buying is largely absent, except in carload lots. A large consumer of Bessemer iron is expected to place a long-deferred order soon after Sept. 1. The local merchant stack is still in production, and another in the Valleys may blow in within the next month. Prices have been well maintained in recent small-lot sales.

Semi-Finished Steel

Shipments continue light and new buying is generally lacking. Prices are untested, but apparently firm at $26, Pittsburgh or Youngstown, on billets, slabs and sheet bars. Forging billets are well maintained at $33, and wire rods are unchanged at $37.

Rails and Track Accessories

The market continues quiet, though there are reports of pending purchases of rails and accessories by a number of large roads. The Erie has placed 3500 kegs of screw bolts among five producers, and is in the market for nuts to go with this order. No rail purchases from this source are expected.

Bolts, Nuts and Rivets

Demand continues unsatisfactory, and the falling off in automobile company requirements has been a further depressing influence in the last month. Prices are holding, but production is not above 10 per cent of capacity.

Bars, Plates and Shapes

Inquiry for structural steel and reinforcing bars is increasing, and several private projects in this district which had been long deferred are soon to be announced. The past week's new projects, as figured by large local fabricators, amounted to at least 30,000 tons in the country as a whole, but included 18,000 tons for the Philadelphia post office. Awards reflected no increase over the preceding week. The Pennsylvania Railroad's application for a Government loan to finance the purchase of 1500 steel box cars will be watched with interest, as a number of other carriers are expected to seek money for the same purpose if the interest rates are favorable. It is believed, nevertheless, that no pressure will be brought against the railroads to borrow money for repairs and new equipment, and that such business as may come from this source will represent legitimate demand and not inflationary buying. Sheet steel piling is moving in fair volume, and a local mill has been awarded about 300 tons for the Hoover Dam, even though lower bids were submitted by European makers. Plate work is rather quiet, and inquiries for river craft of all types are developing an unusually large number of bidders. Prices are generally very low on all fabricated plate and structural work. Merchant bars are quiet, and alloy steel material is moving in reduced volume. Prices on bars, plates and shapes are holding very well in most instances.

Tubular Goods

While general demand for pipe shows no marked change, there is some improvement in boiler tube business, and mechanical tubing seems to be slightly more active. A central pumping station in the District of Columbia, which would require about 1000 tons of boiler tubes in addition to other special material, is being revived. Shipments to the oil country have been rather light this month, and

no line pipe tonnage has come out. Standard pipe is still very quiet.

Wire Products

The merchant wire trade seems to be approaching a buying mood very rapidly, particularly in the agricultural districts. But releases have not gained noticeably as yet. Manufacturers' wire is particularly dull, and activity in spring wire is limited. The price situation is rather satisfactory, and talk persists of advances on fourth quarter business. Nails are quoted at $1.95 a keg, Pittsburgh, and manufacturers' wire at 2.20c., Pittsburgh.

Sheets

Specifications reaching some of the local mills were a little heavier last week, and current production schedules are at fully 15 per cent of capacity. Improvement came principally from small miscellaneous buyers, most of whom are showing considerably more interest in their future requirements. The roofing trade is expected to be in the market more actively in the near future, and some mills look for improved automobile demand next month.

Prices have shown no definite change, and weakness is confined principally to hot-rolled annealed and galvanized sheets. However, the situation is no worse than it has been, and the 2.85c., Pittsburgh, price on galvanized applies n the bulk of orders. Makers of steel drums are still enjoying concessions of as much as $2 a ton on hot-rolled annealed sheets, but this represents an advance over second quarter tonnage, and is generally to be expected in the trade. The price on auto body sheets is largely nominal, as there has been no recent buying to test the market. The other grades are largely unchanged.

Tin Plate

The downward trend in specifications has apparently been checked, and operations this week show no decline from the recent 35 per cent level. Releases from the larger container manufacturers have benefited independent mills to some extent, although such tonnage has not been widespread enough to bring about any general increase. An upturn in demand might occur at the end of the month in case the tomato crop is above expectations, but otherwise the industry cannot be expected to show much change. Can makers generally are still anxious to reduce their inventories because of a probable decline in price this fall, but such an adjustment is by no means certain.

Strip Steel

The strip market is especially quiet, and suspension of activity by the Ford Motor Co. may bring further downward adjustment in demand. Some of the other automobile makers are expected to increase their schedules somewhat in September, but in the meantime the strip industry must depend upon small miscellaneous users if any increase in releases occurs. Prices are holding satisfactorily on both hot and cold-rolled strip.

Coke and Coal

The market seems to be a little more active, but no definite improvement in foundry shipments is reported. Furnace coke continues very dull. Coal purchases by the railroads are somewhat more encouraging.

Scrap

Buying by two consumers during the last week has further strengthened the scrap market, even though no more sales at $9 are reported. One mill paid $8.50 or more for the No. 1 grade, while another was able to pick up odd lots at prices ranging from $8 to $8.50. The lower figure is under the price at which dealers can buy scrap, as the market has a very strong undertone. No. 2 steel is also stronger, and the blast furnace grades as well as machine shop turnings are quotable at a 50c. advance. A sale of hydraulic compressed sheets has established this market on a higher level, following several weeks of extreme weakness. Some dealers expect no further mill purchases during the month, but at least two large consumers may come into the market at any time.

British Steel Makers Reaffirm Prices for Three Months

Markets Quiet—German Railways to Buy 122 Locomotives—Large Moroccan Development Projected—New Steel Plant for Russia

LONDON, ENGLAND, Aug. 15 (*By Cable*).—Business is restricted, partly because of the holidays. Sentiment in some quarters is more hopeful. The Steel Makers Association has reaffirmed prices for the next three months.

United Kingdom exports of pig iron in July were 5000 tons, including 50 tons shipped to the United States. Total exports of all kinds of iron and steel in the month were 158,000 tons.

The Continental market is quiet. Some mills are making efforts to raise prices, but have not yet met with success.

British Prices, f.o.b. United Kingdom Ports

Per Gross Ton

Ferromanganese, export	£9	0s.		
Billets, open-hearth	4	17	6d to £5	7s. 6d
Black sheets, Japanese specifications	9	12	6	
Tin plate, per base box	15	3	to 15	6
Steel bars, open-hearth	7	17½	to 8	7½
Beams, open-hearth	7	7½	to 7	17½
Channels, open-hearth	7	12½	to 8	2½
Angles, open-hearth	7	7½	to 7	17½
Black sheets, No. 24 gage	8	0	to 8	10
Galvanized sheets, No. 24 gage	9	0		

Continental Prices, f.o.b. Continental Ports

Per Metric Ton, Gold £ at $4.86

Billets, Thomas	£1	17s.	6d	
Wire rods, No. 5 B.W.G.	4	10		
Black Sheets, No. 31 gage, Japanese	11	5		
Steel bars, merchant	2	2		
Beams, Thomas	2	2		
Angles, Thomas, 4-in. and larger	2	1		
Angles, small	2	3		
Hoops and strip steel over 6 in. base	3	0	to 3	2 6
Wire, plain, No. 8	5	7½		
Wire, barbed, 4-pt., No. 10 B.W.G.	8	15		

The Welsh tin plate market is rather active, with prices firm owing to rising costs of tin and curtailment of tin plate output. Tin plate mills have satisfactory order books for some months on the basis of permitted output.

Deliveries by Belgian mills have not been affected by the prolonged partial coal stoppage despite the abortive efforts by extremists to extend the conflict to steel works and general industry.

German railways will order 122 locomotives during 1933.

With the intention of enabling Holland to become self-supporting in respect to output of iron and steel, the Dutch Government has granted a subsidy to the Royal Dutch blast furnace works of Ymuiden. The company will install rolling mills and a cast iron pipe plant.

A new Russian plant may be built in Bashkiria with six blast furnaces. The plant will have an annual capacity of 1,500,000 tons of pig iron, 1,750,000 tons of raw steel, and a finished steel capacity of 1,300,000 tons, including 500,000 tons in tubular goods.

A six-year industrial program for Morocco provides for the expenditure of 1,350,000,000 French fr. The improvement will cover railways, harbors and mines in French and Spanish zones.

Electric Hoist Manufacturers' Association reports that the number of hoists ordered during July decreased 57 per cent as compared with the previous month.

Chicago Sales Show Moderate Gain; Ingot Output Is Higher

CHICAGO, Aug. 16.—Steel sales and specifications have shown a slight gain. Smaller releases from the automobile industry have been offset by a larger volume of orders from miscellaneous sources.

Growing business confidence has thus far failed to quicken activity in major consuming lines, although the volume of construction work continues to hold at a fairly good level. Most of the current structural business consists of Federal and State buildings and bridges for highways. Practically all of this season's contracts for highways have now been placed, and it is apparent that this year's road construction program fell considerably short of that of 1931, the amount of idle road building equipment in this territory being the largest in several years.

Private construction work remains largely dormant except for projects being undertaken by the oil companies and public utilities. An Iowa company has bought 700 tons of pipe for a gas line extension and other orders of a similar character are expected to be placed in time to permit pipe laying before cold weather sets in.

The railroads are expected to undertake car repairs in rather a large way within the next 60 days. While no orders for new equipment are yet in sight, railroad car builders are confident that carriers will discover that much of their equipment is not worth repairing. Hence, car purchases are expected to eventuate this fall or early next year, particularly if there is an upturn in traffic.

Resumption of production at the South Works of Illinois Steel Co. has raised the district ingot rate to 13 per cent of capacity. Two blast furnaces were put back into service at that plant, raising the number of active steel works stacks in this territory to eight of a total of 36.

Pig Iron

Total bookings have not yet increased materially, although there is an increasing number of small releases from various sources and inquiry is more active. A number of farm equipment makers are sounding out the market. Several current inquiries range from 500 to 1000 tons. American Steel Foundries is inquiring for 500 tons of low phosphorus for delivery at Indiana Harbor. This grade is now available at about $25, delivered, for all-rail shipment. Only one merchant blast furnace, an Iroquois stack, is now active in this district, a Federal furnace having been banked.

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Ingot output in Chicago district has risen to 13 per cent from less than 10.

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Miscellaneous orders increase, but improvement has not extended to major consuming lines.

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Scrap market continues firm, though it has lost some of its recent buoyancy.

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Plates

The Globe Oil & Refining Co. has placed an order for oil storage tanks requiring 1300 tons of plates with the Graver Corpn. for erection at McPherson, Kan. With this exception, the market is bare of heavy plate jobs. However, it is expected that considerable car repair work will be undertaken by the railroads in the next 60 days, and this program will call for a sizable tonnage of plates, shapes and bars. Small plate shops report a gain in inquiries.

Pipe

The United Light & Power Co., Davenport, Iowa, has awarded 700 tons of 4 to 6-in. steel pipe to the Republic Steel Corpn. for a pipe line extension. A number of other utility companies are inquiring for pipe for branches and extensions and are likely to make purchases soon so as to get the pipe laid before cold weather sets in.

Structural Material

The American Bridge Co. has been awarded 3300 tons for the North Dakota Capitol at Bismarck, and early action will be taken on 1170 tons for the United States Appraisers' Stores building, Chicago. The volume of structural business is holding up rather well, although a preponderance of the tonnage is of a public character.

Bars

Miscellaneous orders for bars have improved sufficiently to offset the decline in specifications from the automobile industry. Demand for rail steel bars continues at low ebb. Makers of bar iron expect to benefit from prospective railroad repair programs. Common bar iron, in carload lots, is now available at 1.60c. a lb., f.o.b. Chicago.

Wire Products

Bookings have not increased, but are still running 2 to 5 per cent above those of July. Mills are encouraged by evidences of incipient farmer buying. Foreign competition, although no worse than heretofore, is still a problem. German barbed wire and poultry netting continue to reach Chicago via the Great Lakes, while German nails have moved up the Mississippi as far as Fort Madison, Iowa.

Cast Iron Pipe

Council Bluffs, Iowa, has divided 1000 tons of 16-in. pipe between the American Cast Iron Pipe Co. and the Glamorgan Pipe & Foundry Co. Actual inquiries are scarce, but numerous municipalities have applied or are preparing to apply to the Reconstruction Finance Corporation for loans to finance pipe purchases. It is believed unlikely, however, that loans will be granted soon enough to permit work to get started in this territory before weather conditions become too severe for pipe laying.

Rails and Track Supplies

Bookings are limited to small orders for track accessories required for emergency work. Final settlement of the Illinois coal strike, which now seems imminent despite the continued defection of recalcitrant groups among the miners, should result in a revival of interest in light rails. No important gain in demand for standard-section rails is looked for, although the Chesapeake & Ohio and the Louisville & Nashville may make purchases in a month or two. The Chicago Great Western contemplates buying track supplies.

Sheets

Demand shows no improvement, and mill operations continue to range from 12 to 15 per cent of capacity. Recent weakness in roofing sheets has disappeared.

Scrap

The market has lost some of its buoyancy. Consumer buying has fallen off, although demand for malleable, cast and electric furnace grades is still rather active. Price changes, while still uniformly upward, are fewer. The Burlington will offer 2000 tons of scrap on Aug. 24.

Eastern Pennsylvania Pig Iron Prices Lower, Sales Increase

Business Sentiment Continues to Improve—Pennsylvania Plans to Build 1500 All-Steel Box Cars

PHILADELPHIA, Aug. 16.—Improved sentiment in the trade has gathered more strength. But except for a firmer tone in certain grades of scrap and a pick-up in pig iron sales, the betterment has not been translated into actual business.

The plan of the Pennsylvania Railroad to ask for a loan of $2,000,000 from the Reconstruction Finance Corporation for the building of 1500 all-steel box cars at its Altoona, Pa., shops is looked upon as an encouraging sign for the mills, and it is hoped that it is the forerunner of a general buying movement among the carriers. It has not been made known whether the Pennsylvania proposes to build entirely new cars or to use old underframes on which to build the superstructure. It is estimated that the cars will call for about 19,000 tons of plates, shapes and sheets in addition to requirements for axles and wheels.

The past week saw a fair-sized movement of basic iron taken by a mill in this district. This is the first substantial sale of this grade of iron in this district for more than a year. Foundry grades are moving in carlots. Foreign iron has further depressed the market for domestic grades.

Operations of steel works continue at about 14 per cent of capacity.

Pig Iron

For the first time in more than a year, a fair-sized tonnage of basic iron was sold to a nearby steel works the past week. The purchase price was not made known. However, domestic iron has softened further in price, owing to low quotations on foreign material. Basic now is quoted at $14 to $15, delivered eastern Pennsylvania. Foundry grades are off 50c., with No. 2 plain at $13 to $13.50, furnace. Some sellers, however, continue to quote $14 to $14.50 and report sales of carlots at the latter range. Virginia No. 2 plain now is quoted at $21.79, delivered Philadelphia. This works back to $17.25, furnace. Total sales of pig iron the past week probably exceeded those of any similar period for a long time. There are no signs of any concerted buying movement, but consumers are showing more interest, an indication of which is that inquiries have come out for last quarter delivery.

Plates, Shapes and Bars

Plate makers report varying conditions. Some have received more inquiries and somewhat better orders of a miscellaneous character. Others report no improvement. The trade is hoping that the railroads soon will come into the market in a general buying movement both for repair work and some new equipment. Provided a satisfactory interest rate can be arranged, it is believed the railroads will turn to the Government body for sizeable loans with which to make purchases. This, of course, also depends largely on the confidence the carriers may have in an upturn in traffic. Structural shape and steel bar business is quiet. About 3600 tons of fabricated material will be required for a bridge to be built by the New Jersey State Highway Commission over the Hackensack River near Ridgefield. It will also require 465 tons of reinforcing bars. Bids will be opened in Trenton, Aug. 29. They will involve other highway work also, calling for about 1000 tons of reinforcing bars for roads.

Sheets

After sagging $5 a ton to 2.60c., Pittsburgh, No. 24 galvanized sheets again are reported by mills to have firmed up to the regular price of 2.85c. The mills now have restored an old practice and are allowing jobbers a concession of $2 a ton on carlot shipments of galvanized sheets when made direct to consumers. No differential is allowed on shipments for jobbers' stocks.

Scrap

The market reflects a still firmer tone. This is especially true of heavy melting steel and heavy breakable cast. No. 2 heavy melting and heavy breakable cast are up 50c. a ton. Mills are buying somewhat more freely in anticipation of better business. A movement has developed in scrap shipments that is unusual. This is seen in a number of ocean barge loads of cast iron scrap, stove plate and No. 2 heavy melting steel, now en route to Philadelphia for delivery to nearby mills. The material is being moved at low rates.

St. Louis Steel Operations Increased; Scrap Stronger

ST. LOUIS, Aug. 16.—Renewed interest in foundry iron is being shown as a result of increased operations of stove plants in the St. Louis industrial district. The last of the idle plants started up this week, and all are operating, although at a low rate for the present. Other melters are talking of their requirements, and some buying is expected around Labor Day. Prices continue firm and unchanged.

Steel

Open-hearth furnace operations in the St. Louis industrial district have been increased during the week to about 17 per cent of capacity, or from three to five furnaces. Warehouse interests are looking for an early resumption of buying from the southern Illinois coal fields, where a strike has been settled, and from the stove trade, which is showing renewed activity.

Scrap

Carwheels have been very much in demand, a leading car manufacturer seeking to buy a large tonnage, said to be 10,000 tons, as a result of becoming alarmed because this material is going into other channels. The market has advanced 50c. a ton on this item, but railroads are not inclined to sell at the higher price. No. 1 locomotive tires also are 50c. a ton higher. Railroad lists: Pullman Co. (St. Louis), four carloads; Chicago, Burlington & Quincy, 4000 tons.

Cincinnati Pig Iron Inquiries Gain

CINCINNATI, Aug. 16.—A moderate increase in carload inquiries for pig iron the past week added substance to current market feeling, but new business continues to reflect the low melt. Shipments on old contracts are at steady rate. Melters are unwilling to make commitments for future material until their own markets reflect an upturn. Prices on both Northern and Southern iron are unchanged.

Scrap

An inquiry from a consumer for a substantial amount of blast furnace scrap failed to attract dealers because of inability to profit at the price offered. Increases in prices in other districts have strengthened local sentiment, but dealers are wary of short sales.

Corrigan, McKinney and Newton Merger Approved

The plan for an affiliation between the Corrigan, McKinney Steel Co., Cleveland, and the Newton Steel Co., Monroe, Mich., has been approved by the deposit of more than the required number of preferred and common shares of the Newton company to make the plan operative, according to announcement made Tuesday by the former company.

Cleveland Pig Iron Business More Active, Steel Dull

Ingot Output Still at 12 Per Cent—Orders From Automobile Industry Are Very Small

CLEVELAND, Aug. 16.—Demand for finished steel shows little change as compared with the previous few weeks. Orders are in small lots from miscellaneous sources and no consuming industry in the metal-working field shows an increase in its demands. However, a favorable market factor is quite an increase in warehouse business during the week.

Very little tonnage is coming from the motor car industry, and a gain is not expected from that source until steel is bought for new models, which probably will not be before September. Production of present models continues to taper off.

With only four open-hearths operating, ingot production in Cleveland is unchanged this week at 12 per cent of capacity.

The Erie Railroad has purchased 750,000 screw type spikes, or 250 to 300 tons, dividing this business among several makers. No other railroad buying is in immediate prospect in this territory. Cold-rolled strip is moving fairly well to miscellaneous users outside of the motor car field, particularly to makers of steel beds. Wire products remain quiet, with orders confined to small lots as needed. The improved inquiry for pig iron is being maintained and sales show some gain, although foundries are slow in closing.

Weakness has developed in hot-rolled and galvanized sheets, but other steel prices are firm.

Dealers have marked up their asking prices for scrap 25c. to 50c. a ton.

Pig Iron

Sales increased the past week and there was also a gain in inquiries. Some of the larger inquiries reported a week ago are still pending. One Lake furnace interest during the week sold 2500 tons, including two 500-ton lots. Some new business came from stove and agricultural implement manufacturers, but none from the motor car industry. Pending inquiries aggregate over 10,000 tons, including 2000 tons of malleable iron. While foundry operations have not increased, foundrymen are affected by the improvement in sentiment and are inclined to buy further ahead. Most of the inquiries are from melters that have been buying only in small lots and now plan to cover for their requirements for the remainder of the year. Prices are steady at $14.50, Cleveland, for foundry and malleable iron for outside shipment and $15.50 for local delivery.

Strip Steel

Demand for hot-rolled strip has further declined owing to an absence of specifications from the motor car industry and there is little call for strip from other sources. Recent inquiries from some of the stamping plants have not developed into orders. Prices are steady at 1.45c. to 1.50c., Pittsburgh, all but small consumers getting the lower price. Cold-rolled strip is untested at 2c., Cleveland.

Sheets

There is a scattered demand for small lots from industries outside of the motor car field, largely for black, galvanized, enameling and electrical sheets. Stove manufacturers are planning to get under way shortly on new models and producers look for some new demand from this industry, which has been inactive for some time. Galvanized sheets are moving slightly better to the building industry. Weakness has developed on black and galvanized sheets. For the former 2.10c., Pittsburgh, is being quoted by some producers, and galvanized sheets have been sold at 2.75c. for car lots. The concession is $2 a ton for both grades.

Bars, Plates and Shapes

Aside from occasional small orders, demand for fabricated steel is still confined to bridge projects. The Erie Railroad has placed 220 tons for a bridge at Salamanca, N. Y. Bids will be opened Aug. 19 for the Great Miami Railroad bridge in Butler County, Ohio, and the Miami River bridge at Defiance, which together call for 1200 tons of structural steel and 460 tons of reinforcing bars. There is no new inquiry for sizeable lots. Merchant bars continue to move slowly, and alloy bars are very quiet. Miscellaneous carlot orders for plates show a slight gain. Prices are firm at 1.65c., Cleveland, for bars and 1.60c., Pittsburgh, for plates and shapes.

Scrap

The market has a firmer tone, which is a reflection of improved sentiment and of higher prices in Pittsburgh rather than being due to any increase in activity. With no new demand, the market is virtually at a standstill. Dealers have marked up their quotations 25c. a ton on heavy melting steel and on compressed sheet steel and 50c. a ton on machine shop turnings, on mixed borings and turnings and on No. 2 busheling. In the absence of sales, the higher quoted prices have not been tested.

Buffalo Pig Iron Sales and Inquiry Improve

BUFFALO, Aug. 16.—Pig iron inquiry and sales continue to improve. Total sales are understood to have been more than 2000 tons in the week. Keener interest is apparent among small buyers. There is a total of approximately 1500 tons of inquiry, mostly from single carloads up to 200 tons. One Eastern melter requires 350 tons.

Steel

Steel mill operations this week are low. The Lackawanna plant of Bethlehem Steel will operate three furnaces most of the week, although there is a possibility that this number may be cut for a couple of days. This is the idle week at the Republic plant. Wickwire Spencer is operating one open-hearth. A Buffalo fabricator took 200 tons of structural steel for the new Veterans' Hospital, Batavia, N. Y., and two State bridges in Wyoming and Orleans counties, totaling 180 tons.

Scrap

A sale of 1000 tons of No. 1 cast is reported to have been made to a radiator plant at a nearby point. Prices appear to be firming.

Reinforcing Steel

Awards 1500 Tons—New Projects 7000 Tons

AWARDS

Hoboken, N. J., 200 tons, industrial building, to Joseph T. Ryerson & Son, Inc.

Pittsburgh, 110 tons, approaches to South Tenth Street bridge, to Electric Welding Co.

Cincinnati, 130 tons, school, to Jones & Laughlin Steel Corpn.

Hinsdale, Mich., 100 tons, grain elevators, to Calumet Steel Co.

St. Cloud, Minn., 120 tons, Veterans' Hospital, to Concrete Engineering Co.

Fayetteville, Ark., 550 tons, Veterans' Hospital, to Concrete Engineering Co.

Sunnyvale, Cal., 290 tons, industrial buildings at dirigible base, to unnamed bidder.

NEW REINFORCING BAR PROJECTS

Batavia, N. Y., 600 tons, Veterans' Hospital; Concrete Engineering Co. of Omaha, low bidder.

State of New York, 1600 tons, bars and mesh for bridges and highway construction.

Chicago, 275 tons, Halsted Street bridge for city of Chicago; Fitzsimons & Connell Dredge & Dock Co., general contractor.

State of Wisconsin, 100 tons, three bridges; bids close Aug. 23-24.

Bismarck, N. D., 400 tons, State Capitol; general contract awarded to Lundoff-Bicknell Co., Chicago.

State of Wyoming, 100 tons, various highway structures; bids close Aug. 23.

San Francisco, 4206 tons, transbay bridge, call for bids shortly.

State of Illinois, 500 tons, State road work; general contract bids to be taken at Springfield, Aug. 31.

New York Pig Iron Market Shows Renewed Activity

Inquiries Increase—Railway Equipment Manufacturer Asking for Prices on 3000 Tons of Low Phosphorus

NEW YORK, Aug. 16.—Aggregate steel tonnage has not gained in this district to any noticeable extent, although here and there are reports of minor improvement in orders or inquiries for some products. There is, perhaps, greater diversification of orders, some consumers that have not recently been in the market having placed small orders again in the past week. In some instances these orders have come from companies such as stove and heater manufacturers which are preparing for seasonal expansion of their markets. In other cases the orders have come from plants that were shut down for several weeks or that had carried over a sufficient amount of low-priced tonnage from the second quarter to cover their requirements up to this time.

Rather marked weakness in galvanized sheets, which carried prices down several dollars a ton for a very brief period, has apparently been overcome, and nearly all makers are again quoting 2.85c. a lb., Pittsburgh. The weakness was brought about largely by the offering of stock for liquidation by a mill that is not now operating. No. 24 hot-rolled annealed sheets have been sold at concessions of $2 a ton to some of the larger users, such as barrel makers. Efforts are being made to reestablish the former fairly steady position of the 2.20c. quotation.

Pig Iron

The volume of inquiry reached a high point for the year last week when about 5000 tons was under negotiations. Practically all of this tonnage is still pending, including 3000 tons of low phosphorus for fourth quarter delivery to Railway Steel Spring Co. The increased demand, however, has not imparted strength to prices. Eastern Pennsylvania iron is notably weak at $13.50, furnace. Buffalo iron at $14 is experiencing difficulty in reaching this district in the face of competition on Dutch iron, particularly where round-lot tonnage is involved. Bookings of about 2000 tons in the past week doubled those in the preceding week and compare with 1500 tons two weeks ago.

Reinforcing Bars

Public works projects requiring bars are scarce, while private construction is virtually nil. The only important specifications that appeared in the past week cover about 1600 tons of bars and mesh for bridge and road construction in the State of New York. Two hundred tons of bars for a factory building in Hoboken, N. J., was placed with Joseph T. Ryerson & Son, Inc. Prices are firm at 1.75c., Pittsburgh, and 2.10c., New York.

Scrap

Prices are apparently maintaining the strong tone that prevailed a week ago. Demand shows definite indications of improvement. Mill releases are slightly better. Recent sales of stove plate, No. 1 machinery cast and No. 1 heavy cast have established prices for these grades at 50c. a ton higher.

Two Large San Francisco Bridges Will Take 247,000 Tons of Steel

SAN FRANCISCO, Aug. 15.—Engineering plans for the $75,000,000 San Francisco-Oakland bridge have been finally accepted by the board of consulting engineers, and details of construction have been issued, including tentative estimates of materials. It is announced that a call for bids will be issued shortly.

This bridge is included in the California State highway system and has been planned under State auspices. Its proponents feel that it will be among the first projects favorably considered by the Reconstruction Finance Corporation, since it was cited on the floor of Congress as an example of a project fulfilling self-liquidating requirements. It has been passed upon by various Federal departments concerned, soundings and test borings have been made, and plans carefully drawn and considered for the past year.

The bridge will span the main channel of San Francisco Bay from Rincon Hill, south of the business center, northeastward to Yerba Buena Island. Tunneling through the top of this mid-bay island, a second series of spans cross the shallower eastern bay channel to the "Key Route" mole, and traffic will proceed on that fill to Oakland and Berkeley. A two-deck structure to handle automotive and interurban electric traffic is contemplated.

Materials required, as announced by the chief engineer, will include:

	Tons
Structural steel	115,850
Cable wire	17,910
Reinforcing bars	4,206
Cast steel	1,425
High tensile bolts	125
Total	139,516

San Francisco's second major bridge project, the $35,000,000 Golden Gate bridge, crossing the entrance-neck to San Francisco Bay northward to Marin County also became active during the week. The Southern Pacific Co. and its subsidiary ferry system publicly announced the withdrawal of their opposition, so that litigation pending before the Supreme Court will not be pressed. Contracts involving 107,000 tons of material were provisionally let a year ago as follows: 72,000 tons, main superstructure, to McClintic-Marshall Corpn.; 28,000 tons, wire and cables, to American Cable Co.; 6800 tons, approach structures, to Columbia Steel Co.

Conferences are now being held between the bridge directors and contractors over the possibility of carrying out the former contracts or readvertising for bids.

Lettings of approximately 1500 tons and new inquiries for less than half of this amount are reported for the week, exclusive of the bridge project developments. The Far Western market is firmer, and a confident attitude is apparent.

Detroit Scrap Prices up 25c. to 75c. a Ton

DETROIT, Aug. 16.—Increases of 25c. to 75c. a ton in the prices of various items, including an advance of 25c. on heavy melting steel, reflect a better sentiment rather than a gain in actual buying in the local scrap market. No. 1 busheling is up 75c. a ton as the result of anticipated orders from a Canton, Ohio, user which has made no important purchases in many months.

Railroad Equipment

United States Navy Department has ordered one 30-ton steel flat car from Haffner-Thrall Car Co., Chicago.

Pennsylvania Railroad has been authorized by its directors to apply to the R. F. C. for a loan to finance the reconstruction in its own shops of 1500 all-steel box cars of 50 tons capacity.

The Denver & Rio Grande Western Railroad Co. has applied to the R. F. C. for a $4,000,000 loan to construct the Dotsero cutoff on the main line from Denver to Salt Lake, comprising 41 miles of single track along the Colorado River.

Birmingham Steel Mills Gain Slightly in Orders

BIRMINGHAM, Aug. 16. — There are signs of a slightly better feeling in the pig iron market, which has not yet been reflected in bookings or shipments. Stove and pipe plants have made small increases in their iron requirements, though not to the extent that was expected some weeks ago. The stove season is finally developing, and, though demand will be highly restricted, there will be at least some improvement over the low points of the spring and summer. Pipe plants are beginning to see some definite early tonnage. Quotations on pig iron for the Southern market remain at $11.

Steel

Last week had a better tone. New tonnage booked by the two steel manufacturers in this district was slightly higher than for any other week of the past several months. This was largely due to some highway tonnage, secondary buying of wire products and the gradual accumulation of sheet demand. Jobber stocks have got to a very low point in many cases. Buying is now coming from that quarter and is expected to be helped by the improvement in farm commodity prices.

Open-hearth operations last week consisted of five active units, a decrease of one as compared with the preceding month.

Scrap

Better sentiment continues to be in evidence, but only a few sales of small tonnages are being made.

New England Pig Iron Inquiry Increases

BOSTON Aug. 16.—Although pig iron sales the past week were confined to scattered small lots, furnace representatives are optimistic because of a better inquiry. In addition to the 300 to 500-ton Connecticut inquiry, reported a week ago, the H. B. Smith Co., Westfield, Mass., is sounding out the market on 500 tons, another melter is asking prices on 150 to 200 tons, another on 100 to 150 tons, another on an indefinite tonnage, while there are several smaller inquiries, the aggregate being more than 2000 tons, the largest amount noted in many months. All iron under negotiation is for fourth quarter delivery. A New York State furnace is offering No. 2X iron at $16.15 a ton, delivered, and Dutch iron can be had at price concessions, but domestic furnaces generally are holding to recent quotations.

In the scrap market business is a little better, but a long way from active. Prices have not changed, despite advances elsewhere.

Fabricated Structural Steel

Fresh Projects in Largest Volume Since April, 1931

THE Transbay bridge at San Francisco, which will require 115,850 tons, accounts for the bulk of new projects involving 126,300 tons of structural steel, the largest volume reported for any week since April 9, 1931. Lettings in the past week of 12,800 tons, approximately the same total as in the preceding week, included 3300 tons for the State Capitol building at Bismarck, N. D., and 1800 tons for a New Jersey State highway bridge over Shark River.

NORTH ATLANTIC STATES

Boston, 500 tons, City Hospital unit, to Boston Bridge Works, Inc.

Lynn, Mass., 220 tons, post office to western fabricator.

Salem, Mass., 175 tons, post office to Lackawanna Steel Construction Corpn.

State of New York, 235 tons, bridge, in Steuben County, to American Bridge Co.

State of New York, 370 tons, bridge in Oswego County, to Lackawanna Steel Construction Corpn.

New York, 130 tons, foundations for Federal court house, to Phoenix Bridge Co.

New York, 830 tons, New York Central viaduct, Horatio Street to Gansevoort Street, to McClintic-Marshall Corpn.

Batavia, N. Y., 200 tons, veterans hospital, to Lackawanna Steel Construction Corpn.

Wyoming and Orleans counties, N. Y., 180 tons, bridges, to Lackawanna Steel Construction Corpn.

Rochester, N. Y., 1500 tons, post office, to McClintic-Marshall Corpn.

Salamanca, N. Y., 220 tons, Erie Railroad bridge, to Jones & Laughlin Steel Corpn.

State of Maryland, 250 tons, Castleman River bridge, to Pittsburgh-Des Moines Steel Co.

State of New Jersey, 1800 tons, Shark River bridge, to American Bridge Co.

CENTRAL STATES

Joliet, Ill., 120 tons, post office, to New City Iron Works.

Manteno, Ill., 115 tons, building, to Edwin Pratt & Sons Co.

Sioux City, Iowa, 700 tons, post office, to Wheeling Structural Steel Co.

Ausable, Mich., 125 tons, bridge, to R. C. Mahon Co.

Henderson County, Ill., 500 tons, bridges, to Vincennes Bridge Co.

Dade County, Mo., 230 tons, bridge, to Kansas City Structural Steel Co.

Sullivan County, Mo., 135 tons, bridge, to Stupp Brothers Bridge & Iron Co.

Carroll County, Mo., 120 tons, bridge, to St. Joseph Structural Steel Co.

Bismarck, N. D., 3300 tons, State Capitol building, to American Bridge Co.

WESTERN STATES

Tracy, Cal., 263 tons, bridge over Paradise Cut, to Pacific Coast Engineering Co.

Merced County, Cal., 525 tons, bridge over Merced River, to Moore Dry Dock Co.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Connecticut, 300 tons, three bridges.

Millinocket, Me., 100 tons, machine room extension.

New York, 3200 tons, Health Center building.

New York, 2000 tons, Cunard Line pier No. 54.

State of Pennsylvania, 160 tons, Crawford County bridge.

CENTRAL STATES

Chicago, 300 tons, Salvation Army training school.

Ottawa, Ill., 1200 tons, deep waterway bridge for Department of Public Works and Buildings, Division of Waterways, State of Illinois; bids on general contract to be taken Aug. 30.

Henderson County, Ill., 279 tons, State highway bridges; general contract bids to be taken at Springfield Aug. 31.

State of Indiana, 900 tons, bridges.

State of Wisconsin, 400 tons, highway railroad overpass.

State of Wisconsin, 625 tons, three highway bridges; bids close Aug. 23-24.

State of North Dakota, 275 tons, highway railroad overpass.

SOUTH AND SOUTHWEST

Ashboro, N. C., 700 tons, Stoops Ferry highway bridge.

Missouri Pacific Railroad, 500 tons, beam spans for bridge at Paroquet, Ark.

WESTERN STATES

Sheridan County, Wyoming, 250 tons, bridges; bids close Aug. 23.

San Francisco, 115,850 tons, Transbay bridge superstructure and foundations, call for bids to be issued shortly.

Glendale, Cal., 100 tons, city bridge over Canada Boulevard.

FABRICATED PLATE

AWARDS

McPherson, Kan., 1300 tons, tanks, to Graver Corpn.

Pasadena, Cal., 150 tons, welded pipe for Pine Canyon dam, to Western Pipe & Steel Co.

Whittaker, Cal., 700 tons, four gas holders, to Chicago Bridge & Iron Works.

Pipe Lines

Western Construction Co., Pecos, Tex., has begun construction of 3-in. pipe line for oil service from loading plant near Santa Fe Railway line to Phillips pool, about 12 miles.

City Council, Ogden, Utah, is considering recommendation of J. C. Brown, city engineer, for installation of new pipe line through Ogden Canyon for water service, from Black Point to city reservoir. Estimated cost over $300,000.

Morgan Hill, Cal., contemplates a $32,000 bond issue for new water system.

Tacoma, Wash., plans to devote $1,000,000 of the $3,000,000 R. F. C. funds applied for to reconstruct the Green River water system pipe line.

Vancouver, Wash., is attempting to borrow 250,000 from the R. F. C. for construction of a water system.

Orinda Water District, Contra Costa County, Cal., has voted $155,000 of bonds for a water distributing system.

Newburg, Ore., plans installation of about one mile of 3- and 4-in. steel pipe as an unemployment relief measure.

Nine Idaho cities, Pocatello, Twin Falls, Coeur d'Alene, Payette, Idaho Falls, Shoshone, Buhl, St. Maries and Caldwell have applied to the R. F. C. for an aggregate of $948,750 in loans for self-liquidating waterworks construction.

Northwestern Natural Gas Co., Northern Life Tower, Seattle, plans installation of pipe line for natural gas service at Zillah, Wash., and vicinity. Surveys will soon begin.

United Light & Power Co., Davenport, Iowa, placed 700 tons of 4- to 6-in. for pipe line extension with Republic Steel Corpn.

Los Angeles opened bids on Aug. 10 for 137 tons of 6-, 8- and 10-in. steel water pipe. South Chester Tube Co. and Santa Fe Pipe & Supply Co. were low bidders.

Tin, Lead Prices Score Further Gains On Good Demand; Copper Quiet

NEW YORK, Aug. 16.—The volume of copper buying in the past week in both the foreign and domestic markets failed to maintain the proportions that were reached the week before. With consumptive needs abroad well covered by the recent flurry of buying, the present lull in foreign demand is considered a normal aftermath. Domestic consumers, while manifesting further gains in sentiment, are still reflecting cautious tendencies in purchasing copper. The leading producers, in turn, are apparently matching the lagging consumer interest with an indifference to sell copper at current prices. The absence of selling pressure is probably predicated upon the belief that the strength in other markets foreshadows higher copper prices. Hence the prevailing market, at 5.37½c. to 5.50c., Connecticut basis, is subject to little variation, with unimportant lots being placed at both levels. Foreign prices, however, are somewhat easier. Outside offerings are available at 5.40c., while Copper Exporters, Inc., has posted special offerings at 5.42½c. to 5.45c., c.i.f. usual foreign ports. Lake copper is dull at 5.50c. to 5.62½c., delivered.

Lead

The leading Eastern and Midwestern producers advanced their prices today $2 a ton to 3.20c., New York, and 3.05c., St. Louis. Buyer response to the higher quotations resulted in a fairly satisfactory volume of orders for September delivery.

Zinc

Demand for zinc is spotty. Sellers are not actively soliciting business at the present prices of 2.75c., East St. Louis, and 3.12c., New York, in view of the uncertainty that exists in the ore situation. At the close of last week, mill grades of ore were quoted at $19 and flotation at $17 and $18.

Tin

A well distributed demand for tin in the past week resulted in a satisfactory volume of buying for both nearby and future positions. The improved interest, however, is based upon anticipatory needs rather than upon increased consumption. The New York price of tin, gathering strength from renewal of demand and further rises in the London market, today reached 23.30c. a lb., the highest level attained during the current upward movement. Further gains in London prices were scored during the week, with today's market quotable at £143 7s. 6d. a ton for spot standard, £145 for future standard and £148 7s. 6d. for spot Straits. Today's Singapore price of £149 15s. represents an advance of £3 10s. for the week. United Kingdom warehouse stocks shrunk 337 tons last week to 32,535 tons. Shipments from the East up to and including Aug. 13 totaled only 1288 tons.

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The Week's Prices, Cents Per Pound for Early Delivery

	Aug. 10	Aug. 11	Aug. 12	Aug. 13	Aug. 15	Aug. 16
Lake copper, New York	5.50	5.50	5.50	5.50	5.50	5.50
Electrolytic copper, N. Y.*	5.12½	5.12½	5.12½	5.12½	5.12½	5.12½
Straits tin, spot, N. Y.	22.87½	23.00	22.87½	23.00	23.15	23.30
Zinc, East St. Louis	2.75	2.75	2.75	2.75	2.75	2.75
Zinc, New York	3.12	3.12	3.12	3.12	3.12	3.12
Lead, St. Louis	2.95	2.95	2.95	2.95	3.05	3.05
Lead, New York	3.10	3.10	3.10	3.10	3.20	3.20

*Refinery quotations; price ½c. higher delivered in the Connecticut Valley.
Aluminum, 98 to 99 per cent pure, 22.90c. a lb. delivered.
Nickel, electrolytic cathode, 35c. a lb. delivered; shot and ingot, 36c. a lb., delivered.
Antimony, 5.00c. a lb., New York.
Brass ingots, 85-5-5-5, 5.75c. a lb., New York and Philadelphia.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits, pig	24.50c. to 25.50c.
Tin, bar	26.50c. to 28.50c.
Copper, Lake	7.50c. to 8.50c.
Copper, electrolytic	7.25c. to 8.25c.
Copper, casting	7.00c. to 8.00c.
*Copper sheets, hot-rolled	14.87½c.
*High brass sheets	12.00c.
*Seamless brass tubes	15.25c.
*Seamless copper tubes	14.37½c.
*Brass rods	9.75c.
Zinc, slabs	4.25c. to 4.75c.
Zinc sheets (No. 9), casks	9.25c. to 9.50c.
Lead, American pig	3.75c. to 4.25c.
Lead, bar	5.50c. to 6.50c.
Lead sheets	7.50c.
Antimony, Asiatic	8.00c. to 9.00c.
Alum., virgin, 99 per cent plus	23.30c.
Alum. No. 1 for remelting, 98 to 99 per cent	16.00c.
Solder, ¼ and ½*	15.25c. to 16.25c.
Babbitt metal, commercial grade	18.00c. to 28.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	26.50c.
Tin, bar	28.50c.
Copper, Lake	6.50c.
Copper, electrolytic	6.50c.
Copper, casting	6.25c.
Zinc, slab	4.25c. to 4.50c.
Lead, American pig	3.75c. to 4.00c.
Lead, bar	6.75c.
Antimony, Asiatic	9.00c.
Babbitt metal, medium grade	16.00c.
Babbitt metal, high grade	31.00c.
Solder, ½ and ½	17.00c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	4.00c.	4.75c.
Copper, hvy. and wire	3.75c.	4.625c.
Copper, light and bottoms	3.00c.	3.625c.
Brass, heavy	1.75c.	2.50c.
Brass, light	1.375c.	2.00c.
Hvy. machine composition	2.75c.	3.50c.
No. 1 yel. brass turnings	2.00c.	2.375c.
No. 1 red brass or compos. turnings	2.375c.	3.00c.
Lead, heavy	2.125c.	2.625c.
Zinc	1.125c.	1.375c.
Cast aluminum	2.75c.	4.25c.
Sheet aluminum	6.50c.	8.00c.

Cast Iron Pipe

Newton, Mass., has placed 850 tons with R. D. Wood & Co.

Council Bluffs, Iowa, divided 1000 tons 16-in. between Glamorgan Pipe & Foundry Co. and American Cast Iron Pipe Co.

Louisville, Ky., 15,000 ft. of 24-in. to United States Pipe & Foundry Co.

Whittier, Cal., has awarded 255 tons of 6-in. to National Cast Iron Pipe Co. and 85 tons of 4-, 8- and 10-in. to C. G. Claussen & Co.

Puyallup, Wash., awarded 153 tons of 6-in. to American Cast Iron Pipe Co.

Blaine, Wash., rescinded call for bids on 140 tons of 12-in. and 16-in.

Madera, Cal., calls for bids on Sept. 19 for 43 tons of 6-in.

United Chromium, Inc. Upheld in Patent Suit

The United States Court of Appeals of the Second District of New York has upheld the decision of the lower court in the case of United Chromium, Inc., against the International Silver Co. for alleged infringement of the Fink patent for the chromium plating of metals. One exception is made to the decision of the lower court, that referring to claim sixteen, which "requires that the bath shall be analyzed after the ingredients have been put in. The defendant's process, as agreed upon by stipulation, is not that; it puts in the proper proportions of chromium and sulphate radical at the start. The difference is not important, but the claim is clearly to cover practice in which commercial chromic acid alone is first used in the solution and the proper ratio established later."

The court holds that all of the other claims are unfringed, and that the decree of the lower court was right except to claim sixteen.

Prices of Finished and Semi-Finished Steel, Coke, Coal, Cast Iron Pipe

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.70c.
Del'd Philadelphia	1.91c.
Del'd New York	1.95c.
Del'd Detroit	1.80c.
F.o.b. Cleveland	1.65c.
F.o.b. Lackawanna	1.70c.
F.o.b. Birmingham	1.75c.
C.i.f. Pacific ports	2.10c.

Billet Steel Reinforcing
(as quoted by distributers)

F.o.b. P'gh mills, 40, 50, 60-ft.	1.60c.
F.o.b. Birmingham, mill lengths	1.75c.
F.o.b. Cleveland	1.60c. to 1.75c.

Rail Steel

F.o.b. mills, east of Chicago dist	1.35c. to 1.45c.
F.o.b. Chicago Heights mills	1.50c.

Iron

Common iron, f.o.b. Chicago	1.60c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.11c.
Common iron, del'd New York	2.15c.

Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.70c.
F.o.b. Birmingham	1.75c.
F.o.b. Lackawanna	1.70c.
F.o.b. Bethlehem	1.70c.
Del'd Cleveland	1.8035c.
Del'd Philadelphia	1.7935c.
F.o.b. Coatesville	1.70c.
F.o.b. Sparrows Point	1.70c.
Del'd New York	1.8[illegible]c.
C.i.f. Pacific ports	2.00c.

Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.70c.
F.o.b. Birmingham	1.75c.
F.o.b. Lackawanna	1.70c.
F.o.b. Bethlehem	1.70c.
Del'd Cleveland	1.8035c.
Del'd Philadelphia	1.7495c.
Del'd New York	1.86775c.
C.i.f. Pacific ports (standard)	2.10c.
C.i.f. Pacific ports (wide flange)	2.20c.

Steel Sheet Piling

	Base per Lb.
F.o.b. Pittsburgh	1.90c.
F.o.b. Chicago mill	2.05c.
F.o.b. Buffalo	2.00c.

Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quantity Bar Base, 2.45c. to 2.65c. per Lb.

S.A.E. Series Numbers		Alloy Differential per 100 Lb.
2000	(1¼% Nickel)	$0.25
2100	(1¼% Nickel)	0.55
2300	(3½% Nickel)	1.50
2500	(5% Nickel)	2.25
3100	Nickel Chromium	0.55
3200	Nickel Chromium	1.35
3300	Nickel Chromium	3.80
3400	Nickel Chromium	3.20
4100	Chromium Molybdenum (0.16 to 0.25 Molybdenum)	0.50
4100	Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4800	Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.50 to 2.00 Nickel)	1.05
5100	Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100	Chromium Steel (0.80 to 1.10 Chromium)	0.45
6100	Chromium Spring Steel	0.20
6100	Chromium Vanadium Bar	1.20
6100	Chromium Vanadium Spring Steel	0.95
9250	Silicon Manganese Spring Steel (flats)	0.25
	Rounds and Squares	0.50
Chromium Nickel Vanadium		1.50
Carbon Vanadium		0.95

Above prices are for hot-rolled steel bars, forging quality. The differential for cold-drawn bars is ¾c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets unde 4 x 4 in. carry the steel bar base. Slabs with a section area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2½ in. thick, regardless of sectional area, take the bar price.

Cold Finished Bars*

	Base per Lb.
Bars, f.o.b. Pittsburgh mill	1.70c.
Bars, f.o.b. Chicago	1.75c.
Bars, Cleveland	1.75c.
Bars, Buffalo	1.75c.
Bars, Detroit	1.90c.
Bars, eastern Michigan	1.95c.
Shafting, ground, f.o.b. mill	†2.05c to 3.00c.

*In quantities of 10,000 lb. or more.
†According to size.

SHEETS, STRIP, TIN PLATE, TERNE PLATE

Sheets

Hot-rolled

	Base per Lb.
No. 10 f.o.b. Pittsburgh	1.55c.
No. 10 f.o.b. Chicago mill	1.65c.
No. 10 del'd Philadelphia	1.86c.
No. 10 f.o.b. Birmingham	1.70c.
No. 10, c.l.f. Pacific Coast ports	2.17½c.

Hot-rolled and Annealed

No. 10, Pittsburgh	1.70c.
No. 10, Chicago mills	1.80c.
No. 10, Birmingham	1.85c.
No. 10, Pacific Coast ports	2.32½c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.20c.
No. 24, f.o.b. Chicago mills	2.30c.
No. 24, del'd Philadelphia	2.46c. to 2.51c.
No. 24, f.o.b. Birmingham	2.35c.
No. 24, c.l.f. Pacific Coast ports	2.85c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.25c.
No. 10 gage, f.o.b. Chicago mills	2.35c.
No. 10 gage, del'd Philadelphia	2.46c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	2.75c.
No. 20 gage, f.o.b. Chicago mills	2.85c.
No. 20 gage, del'd Philadelphia	3.06c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	2.85c. to 2.90c.

Steel Furniture Sheets

No. 10, f.o.b. Pittsburgh	2.65c.
No. 20, f.o.b. Pittsburgh	3.15c.

(Prices on furniture stock include stretcher leveling but not resquaring.)

Galvanized Sheets

No. 24, f.o.b. Pittsburgh	2.85c.
No. 24, f.o.b. Chicago mills	2.95c.
No. 24, del'd Philadelphia	3.16c.
No. 24, f.o.b. Birmingham	3.00c.
No. 24, c.l.f. Pacific Coast ports	3.80c.

Long Ternes

No. 24, unassorted, 8-lb. coating, f.o.b. P'gh	2.80c. to 3.00c.

Vitreous Enameling Stock

No. 10, f.o.b. Pittsburgh	2.50c. to 2.60c.
No. 20, f.o.b. Pittsburgh	3.00c. to 3.10c.

Tin Mill Black Plate

No. 28 f.o.b. Pittsburgh	2.40c.
No. 28 Chicago mill	2.50c.

Tin Plate

	Base per Box
Standard cokes, f.o.b. P'gh district mill	$4.75
Standard cokes, f.o.b. Gary	4.85

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)
(Per Package, 20 x 28 in.)

8-lb. coating I.C.	$9.50
15-lb. coating I.C.	12.00
20-lb. coating I.C.	13.00
25-lb. coating I.C.	14.10
30-lb. coating I.C.	14.90
40-lb. coating I.C.	16.70

Hot-rolled Hoops, Bands and Strips

	Base per Lb.
All widths up to 24 in., Pittsburgh	1.45c. to 1.50c.
All widths up to 24 in., Chicago	1.55c. to 1.60c.
Cooperage stock, P'gh	1.55c. to 1.60c.
Cooperage stock, Chicago	1.65c. to 1.70c.

Cold-Rolled Strips

F.o.b. Pittsburgh	2.00c.
F.o.b. Cleveland	2.00c.
Del'd Chicago	2.30c.
F.o.b. Worcester	2.20c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland	2.90c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)

(After Dec. 31, extras of 10c. a 100 lb. on mixed and joint carloads, 25c on pool carloads and 40c. on less than carloads will be applied on all merchant wire products.)

To Manufacturing Trade

Bright wire	2.20c.
Spring wire	3.20c.

To Jobbing Trade

	Base per Keg
Standard wire nails	$1.95
Smooth coated nails	1.95
Galvanized nails	3.95

	Base per Lb.
Smooth annealed wire	2.35c.
Smooth galvanized wire	2.80c.
Polished staples	2.50c.
Galvanized staples	2.75c.
Barbed wire, galvanized	2.60c.
Woven wire fence No. 9 gage, per net ton	$55.00
Woven wire fence, No. 12½ gage and lighter, per net ton	60.00

Chicago and Anderson, Ind., mill prices are $1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill $2 a ton over Pittsburgh, and Birmingham mill $3 a ton over Pittsburgh.

STEEL PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	47	21½	⅛ and ¼	+9	+34
¼ to ⅜	53	27½	½	25	7
½	58	44½	¾	30	13
¾	62	50½	1 and 1¼	33	17
1 to 3	64	52½	1½ and 2	37	20

Lap Weld

2	57	45½	2	25	11
2½ to 6	61	49½	2½ to 3½	30	15
7 and 8	58	45½	4 to 6	32	19
9 and 10	56	43½	7 and 8	31	18
11 and 12	55	42½	9 to 12	28	13

Butt Weld, extra strong, plain ends

⅛	43	26½	⅛ and ¼	+11	+46
¼ to ⅜	49	32½	½	25	9
½	55	44½	¾	30	14
¾	60	49½	1 to 2	36	20
1 to 1½	62	51½			
2 to 3	63	52½			

Lap Weld, extra strong, plain ends

2	55	44½	2	31	15
2½ to 4	59	48½	2½ to 4	36	22
4½ to 6	58	47½	4½ to 6	35	21
7 to 8	54	41½	7 and 8	33	19
9 and 10	47	34½	9 to 12	23	10
11 and 12	46	33½			

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discounts of 5 and 2½% and on galvanized by 1½ points with supplementary discounts of 5 and 2½%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2½%.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel		Charcoal Iron	
2 in. and 2¼ in.	38	1½ in.	1
2½ in.—2¾ in.	46	1¾ in.	8
3 in.	52	2 in.—2¼ in.	13
3¼ in.—3½ in.	54	2½ in.—2¾ in.	16
4 in.	57	3 in.	17
4½ in. to 6 in.	46	3½ in. to 3½ in.	18
		4 in.	20
		4½ in.	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

Standard Commercial Seamless Boiler Tubes

Cold-Drawn

1 in.	61	3 in.	46
1¼ to 1½ in.	53	3½ to 3½ in.	48
1¾ in.	37	4 in.	51
2 to 2¼ in.	32	4½, 5 and 6 in.	40
2½ to 2¾ in.	40		

Hot Rolled

2 and 2¼ in.	38	3½ to 3½ in.	54
2½ and 2¾ in.	46	4 in.	57
3 in.	52	4½, 5 and 6 in.	46

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. in lighter than standard gages takes the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30% base (carloads)	55
Carbon, 0.30% to 40% base	50

Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.

RAILS AND TRACK SUPPLIES

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00
Light (from billets), f.o.b. mill	32.00
Light (from rail steel, f.o.b. mill)	$28.00 to 30.00

Track Equipment

	Base per 100 Lb.
Spikes, 9/16-in. and larger	$2.60
Spikes, ½-in. and larger	2.60
Spikes, boat and barge	2.80
Tie plate, steel	1.85
Angle bars	2.75
Track bolts, to steam railroads	3.50
Track bolts, to jobbers, all sizes, per 100 count	73 per cent off list

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
†Machine bolts	75
†Carriage bolts	75
Lag bolts	75
Plow bolts, Nos. 1, 2, 3 and 7 heads	75
Hot-pressed nuts, blank or tapped, square	75
Hot-pressed nuts, blank or tapped, hexagons	75
C.p.c. and t. square or hex. nuts, blank or tapped	75
Washers*	7.00c. to 6.75c. per lb. off list

*F.o.b. Chicago, New York and Pittsburgh.
†Bolts with rolled thread up to and including ⅝ in. x 6 in. take 10 per cent lower list prices.

Bolts and Nuts

	Per Cent Off List
Semi-finished hexagon nuts	75
Semi-finished hexagon castellated nuts, S.A.E.	75
Stove bolts in packages, P'gh	77½, 25 and 10
Stove bolts in packages, Ch'go	77½, 25 and 10
Stove bolts in pkgs., Cleveland	77½, 25 and 10
Stove bolts in bulk, P'gh	86
Stove bolts in bulk, Chicago	86
Stove bolts in bulk, Cleveland	86
Tire bolts	60 and 10

Discount of 75 per cent off on bolts and nuts applies on carload business with jobbers and large consumers.

Large Rivets

(½-in. and larger)

	Base per Lb.
F.o.b. Pittsburgh or Cleveland	$2.35
F.o.b. Chicago	70, 10 and 5

Small Rivets

(7/16-in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh	70, 10 and 5
F.o.b. Cleveland	70, 10 and 5
F.o.b. Chicago	70, 10 and 5

Cap and Set Screws

Discounts to Jobbers

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screws, 1 in. dia. and smaller	80 and 25
Milled standard set screws, case hardened, 1 in dia. and smaller	75 and 10
Milled headless set screws, cut thread, ⅝ in. and smaller	75 and 10
Upset hex. head cap screws, U.S.S.S. or S.A.E. thread, 1 in dia. and smaller	80, 25 and 10
Upset set screws, sq. head, 1 in. dia. and smaller	75, 10 and 10
Upset set screws, 1⅛ in. and larger	75 and 10
Milled studs	70

SEMI-FINISHED STEEL

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and under 10-in., Pittsburgh	$26.00
Rerolling, 4-in. and under 10-in., Youngstown	26.00
Rerolling, 4-in. and under 10-in., Cleveland	26.00
Rerolling, 4-in. and under 10-in., Chicago	25.00
Forging quality, Pittsburgh	33.00
Forging quality, Youngstown	33.00

Sheet Bars

(Open-Hearth or Bessemer)

	Per Gross Ton
Pittsburgh	$26.00
Youngstown	26.00
Cleveland	26.00

Slabs

(8 in. x 2 in. and under 10 in. x 10 in.)

	Per Gross Ton
Pittsburgh	$26.00
Youngstown	26.00
Cleveland	26.00

(Turn to next page)

(F.o.b. Pittsburgh or Youngstown)

	Per Lb.
Grooved	1.60c.
Universal	1.60c.
Sheared	1.60c.

Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	$37.00
Cleveland	37.00
Chicago	38.00

COKE, COAL AND FUEL OIL

Coke

	Per Net Ton	
Furnace, f.o.b. Connellsville prompt	$2.00 to	$2.15
Foundry, f.o.b. Connellsville prompt	3.00 to	4.25
Foundry, by-product, Chicago ovens, for delivery outside switching districts		7.00
Foundry, by-product, delivered in Chicago switching district		7.75
Foundry, by-product, New England, delivered		10.00
Foundry, by-product, Newark or Jersey City, del'd	8.20 to	8.81
Foundry, by-product, Phila.		9.00
Foundry, by-product, Cleveland, delivered		7.82
Foundry, Birmingham		5.00
Foundry, by-products, St. Louis, f.o.b., ovens		8.00
Foundry, by-products, del'd St. Louis		9.00

Coal

	Per Net Ton	
Mine run steam coal, f.o.b. W. Pa. mines	$1.20 to	$1.30
Mine run coking coal, f.o.b. W. Pa.	1.30 to	1.40
Gas coal, ¾-in., f.o.b. Pa. mines	1.30 to	1.40
Mine run gas coal, f.o.b. Pa. mines	1.30 to	1.40
Steam slack, f.o.b. W. Pa. mines	0.50 to	0.65
Gas slack, f.o.b. W. Pa. mines	0.50 to	0.65

Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.

No. 3 distillate	4.00c.
No. 4 industrial	3.50c.

Per Gal. f.o.b. Baltimore

No. 3 distillate	4.00c.
No. 4 industrial	3.50c.

Per Gal. del'd Chicago

No. 3 industrial fuel oil	2.65c.
No. 5 industrial fuel oil	2.45c.

Per Gal. f.o.b. Cleveland

No. 3 industrial fuel oil	4.62½c.
No. 4 distillate	4.00c.

REFRACTORIES

Fire Clay Brick

	Per 1000 f.o.b. Works High-heat Duty Brick	Intermediate Duty Brick
Penn.	$35.00	$25.00 to $30.00
Maryland	35.00	25.00 to 30.00
New Jer.	$44.00 to 57.00	
Ohio	35.00	25.00 to 30.00
Kentucky	35.00	25.00 to 30.00
Missouri	35.00	30.00
Illinois	35.00	25.00 to 30.00
Ground fire clay, per ton	6.50	

Chrome Brick

	Per Net Ton
Standard size	$42.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$38.00
Chicago	47.00
Birmingham	50.00
Silica clay, per ton	8.00

Magnesite Brick

	Per Net Ton
Standard sizes, burned, f.o.b. Baltimore and Chester, Pa.	$61.50
Unburned, f.o.b. Baltimore	52.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	38.50
Domestic, f.o.b. Chewelah, Wash.	20.90

CAST IRON PIPE

	Per Net Ton	
6-in. and larger, del'd Chicago	$34.40 to	$38.40
4-in., del'd Chicago	37.40 to	41.40
6-in. and larger, del'd New York	31.30	
4-in., del'd New York	34.30	
8-in. and larger, Birm'ham	$32.00 to	33.00
4-in., Birmingham	35.00 to	36.00

Class "A" and gas pipe, $3 extra.

Pig Iron, Ores, Ferroalloys

VALLEY

Per gross ton, f.o.b. Valley furnace:

Basic	$13.50
Bessemer	15.00
Gray forge	14.50
No. 2 foundry	14.50
No. 3 foundry	14.00
Malleable	$14.50 to 15.00
Low phos., copper free	25.00

Freight rate to Pittsburgh or Cleveland district, $1.89.

PITTSBURGH

Per gross ton, f.o.b. Pittsburgh district furnace:

Basic	$14.00
No. 2 foundry	15.00
No. 3 foundry	14.50
Malleable	15.00
Bessemer	15.00

Freight rates to points in Pittsburgh district range from 69c. to $1.26.

CHICAGO

Per gross ton at Chicago furnace:

N'th'n No. 2 fdy.	$15.50
N'th'n No. 1 fdy.	16.00
Malleable, not over 2.25 sil.	15.50
High phosphorous	15.50
Lake Super. charcoal, sil. 1.50, by rail	23.17
Southern No. 2 fdy.	16.14
Low phos., sil. 1 to 2, Copper free	25.00
Silvery, sil. 8 per cent	23.67
Bess. ferrosil'n, 15 per cent	28.92

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnaces, not including a switching charge.

ST. LOUIS

Per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.	$17.50
Malleable, f.o.b. Granite City	17.50
Northern No. 2 fdy., del'd St. Louis	$18.30 to 18.80
Southern No. 2 fdy. del'd.	14.56
Northern malleable, del'd.	18.30 to 18.80
Northern basic, deliv'd	18.30 to 18.80

Freight rates 83c. (average) Granite City to St. Louis; $2.30 from Chicago; $1.56 from Birmingham.

NEW YORK

Per gross ton, delivered New York district:

*Buffalo, No. 2, del'd east N. J.	$17.41 to $17.66
East Pa. No. 2 fdy	15.02 to 15.52
East Pa. No. 2X fdy.	15.52 to 16.02

Freight rates: $1.52 to $2.63 from eastern Pennsylvania.

*Prices delivered to New Jersey cities having rate of $3.41 a ton from Buffalo.

BUFFALO

Per gross ton, f.o.b. furnace:

No. 2 fdy.	$18.00
No. 2X fdy.	16.50
No. 1 fdy.	17.50
Malleable, sil. up to 2.25	16.50
Basic	15.50
Lake Superior charcoal, del'd	23.41

NEW ENGLAND

Per gross ton delivered to most New England points:

*Buffalo, sil. 1.75 to 2.25	$19.04 to $20.04
*Buffalo, sil. 2.25 to 2.75	19.04 to 20.04
†Buffalo, sil. 1.75 to 2.25	17.41 to 18.91
†Buffalo, sil. 2.25 to 2.75	17.41 to 18.91
*Ala., sil. 1.75 to 2.25	19.74
*Ala., sil. 2.25 to 2.75	20.24
†Ala., sil. 1.75 to 2.25	15.88
†Ala., sil. 2.25 to 2.75	16.28

Freight rates: $5.05 all rail from Buffalo, and $3.41 to $3.91 rail and water from Buffalo when $1 barge and $2 to $2.50 New England freight rate are obtainable; $9.75 all rail from Alabama and $5.88 rail and water from Alabama to New England seaboard.

*All-rail rate.

†Rail-and-water rate.

CINCINNATI

Per gross ton, delivered Cincinnati:

Ala. fdy., sil. 1.75 to 2.25	$13.82
Ala. fdy., sil. 2.25 to 2.75	14.32
Tenn. fdy., sil. 1.75 to 2.25	13.82
N'th'n No. 2 foundry	$17.01 to 17.59
S'th'n Ohio silvery, 8%	21.02

Freight rates, $2.02 from Ironton and Jackson, Ohio; $3.82 from Birmingham.

PHILADELPHIA

Per gross ton at Philadelphia:

East Pa. No. 2	$13.81 to $14.31
East Pa. No. 2X	14.31 to 14.81
East Pa. No. 1X	14.81 to 15.31
Basic del'd east Pa.	14.00 to 15.00
Malleable	16.50 to 18.00
Stand. low phos. (f.o.b. east Pa. furnace)	20.50 to 21.50
Cop. b'r'g low phos. (f.o.b. furnace)	20.50 to 21.50
Va. No. 2	21.79
Va. No. 2X	22.29
Va. No. 2 plain	21.54 to 22.04
Va. No. 2X	22.04 to 22.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 84c. to $1.79 from eastern Pennsylvania furnaces; $4.67 from Virginia furnaces.

CLEVELAND

Per gross ton at Cleveland furnace:

N'th'n No. 2 fdy. (local delivery)	$15.50
S'th'n fdy. sil. 1.75 to 2.25	16.14
Malleable (local delivery)	15.50
Ohio silvery, 8 per cent	21.87
Stand. low. phos., Valley	23.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 55c. average local switching charge; $3.12 from Jackson, Ohio; $0.14 from Birmingham.

BIRMINGHAM

Per gross ton, f.o.b. Birmingham dist. furnace:

No. 2 fdy., 1.75 to 2.25 sil.	$11.00
No. 2 soft, 2.25 to 2.75 sil.	11.50
Basic	11.00

CANADA

Per gross ton:

Delivered Toronto

No. 1 fdy., sil. 2.25 to 2.75	$22.60
No. 2 fdy., sil. 1.75 to 2.25	22.10
Malleable	22.60

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75	$24.00
No. 2 fdy., sil. 1.75 to 2.25	23.50
Malleable	24.00
Basic	$23.00 to $23.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard	$68.00
Foreign, 80%, Atlantic or Gulf port, duty paid	68.00

Prices for lots of one carload or more; extras applied on less than carload lots.

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$25.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50% (carloads)	$77.50
50% (less carloads)	85.00
75% (carloads)	126.00
75% (less carloads)	136.00
14% to 16% (f.o.b.) Welland, Ont., in carloads	31.00
14% to 16% (less carloads)	36.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
10%	$20.50	14%	$23.50
11%	21.00	15%	24.00
12%	21.50	16%	25.00
13%	22.50	17%	26.50

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		Per Gross Ton	
6%	$18.00	12%	$20.50
7%	18.50	13%	21.50
8%	18.75	14%	22.50
9%	19.00	15%	23.00
10%	19.50	16%	24.00
11%	20.00	17%	25.50

Other Ferroalloys

Ferrotungsten, per lb. wo. del., carloads	$1.08
Ferrotungsten, less carloads	$1.15 to 1.20
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	10.00c.
Ferrochromium, 2% carbon	17.00c to 17.50c.
Ferrochromium, 1% carbon	19.00c to 20.00c.
Ferrochromium, 0.10% carbon	23.50c to 25.00c.
Ferrochromium, 0.06% carbon	25.50c to 27.00c.
Ferrovanadium, del., per lb. contained Va.	$3.05 to $3.30
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace in carloads	160.00
Ferrophosphorus, electric, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base per gross ton	68.00
Ferromolybdenum, per lb. Mo., del.	90c.
Calcium molybdate, per lb. Mo., del.	80c.
Ferrophosphorus, electric, 24% f.o.b. Anniston, Ala., per gross ton	$91.00
Silico spiegel, per ton, f.o.b. furnace, car lots	42.50
Ton lots or less, per ton	47.50
Silico-manganese, gross ton, delivered:	
2.50% carbon grade	105.00
1% carbon grade	115.00
Spot prices	$5 a ton higher

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.80
Mesabi non-Bessemer, 51.50% iron	4.65
High phosphorus, 51.50% iron	4.40

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron, low phos., copper free, 55 to 58% iron, dry Spanish or Algerian	8c. to 8.50c.
Iron, low phos., Swedish, average 68½% iron	9.00c.
Iron, basic or foundry, Swedish, average 65% iron	8.00c.
Iron, basic or foundry, Russian, aver. 63% iron (nom.)	9.00c.
Manganese, Caucasian, washed 52%	24.00c.
Manganese, African, Indian, 50-52%	23c. to 24c.
Manganese, Brazilian, 46 to 48%	21c. to 22c.

	Per Gross Ton
Tungsten, Chinese wolframite	$10.75 to $11.00
Tungsten, domestic scheelite	$10.00 to 10.50
Chrome, 45%, Cr_2O_3, crude, c.i.f. Atlantic seaboard	18.00
Chrome, 48%, Cr_2O_3, c.i.f. Atlantic seaboard	20.00

Fluorspar

	Per Net Ton
Domestic, washed gravel, 85-5, Kentucky and Illinois mines, freight allowed, Pittsburgh basis	$17.31
No. 2 lump, 85-5, Kentucky and Illinois mines, freight allowed, Pittsburgh basis	19.31
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic port, duty paid	$16.00 to 16.75
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines	30.00

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$8.00 to $9.00
No. 2 heavy melting steel	7.00 to 7.50
No. 2 railroad wrought	8.00 to 8.50
Scrap rails	8.00 to 8.50
Rails 3 ft. and under	10.50 to 11.00
Sheet bar crops, ordinary	8.00 to 8.50
Compressed sheet steel	7.50 to 8.00
Hand bundled sheet steel	6.50 to 7.00
Hvy. steel axle turnings	7.00 to 7.50
Machine shop turnings	5.50 to 6.00
Short shov. steel turnings	5.50 to 6.00
Short mixed borings and turnings	5.50 to 6.00
Cast iron borings	5.50 to 6.00
Cast iron carwheels	8.00 to 8.50
Heavy breakable cast	8.00 to 8.50
No. 1 cast	9.00 to 10.00
Rails, knuckles and couplers	8.50 to 9.00
Rail, coil and leaf springs	8.50 to 9.00
Rolled steel wheels	8.50 to 9.00
Low phos. billet crops	10.50 to 11.00
Low phos. sheet bar crops	10.50 to 11.00
Low phos. plate scrap	9.50 to 10.00
Low phos. punchings	9.00 to 9.50
Steel car axles	10.00 to 10.50

CHICAGO

Delivered Chicago district consumers:

	Per Gross Ton
Heavy melting steel	$5.50 to $6.00
Shoveling steel	5.50 to 6.00
Frogs, switches and guards	5.50 to 6.00
Hydraulic comp. sheets	3.75 to 4.25
Drop forge flashings	3.50 to 4.00
No. 1 bushelling	3.00 to 3.50
Rolled carwheels	6.50 to 7.00
Railroad tires	6.50 to 7.00
Railroad leaf springs	7.50 to 8.00
Axle turnings	4.50 to 5.00
Steel couplers and knuckles	6.50 to 7.00
Coil springs	7.50 to 8.00
Axle turnings (elec. fur.)	5.00 to 5.50
Low phos. punchings	7.50 to 8.00
Low phos. plates, 12 in. and under	7.50 to 8.00
Cast iron borings	3.25 to 3.75
Short shoveling turnings	3.25 to 3.75
Machine shop turnings	2.25 to 2.75
Rerolling rails	6.75 to 7.25
Steel rails, less than 3 ft.	7.50 to 8.00
Steel rails, less than 2 ft.	8.00 to 8.50
Angle bars, steel	7.00 to 7.50
Cast iron carwheels	6.00 to 6.50
Railroad malleable	5.00 to 5.50
Agricultural malleable	4.50 to 5.00
* Relaying rails, 56 to 60 lb.	15.00 to 17.00
* Relay rails, 65 lb. and up	18.00 to 23.00

	Per Net Ton	
Iron angle and splice bars	$5.25 to	$5.75
Iron arch bars, transoms	5.00 to	5.50
Iron car axles	10.50 to	11.00
Steel car axles	7.25 to	7.75
No. 1 railroad wrought	4.50 to	5.00
No. 2 railroad wrought	5.00 to	5.50
No. 1 bushelling	2.50 to	3.00

No. 2 busheling	$1.50 to	$2.00
Locomotive tires, smooth	7.50 to	8.50
Tires and flues	1.25 to	1.75
No. 1 machinery cast	6.00 to	6.50
Clean automobile cast	6.75 to	7.25
No. 1 railroad cast	5.25 to	5.75
No. 1 agricultural cast	4.50 to	5.00
Stove plate	5.50 to	6.00
Grate bars	5.25 to	5.75
Brake shoes	6.00 to	6.50

*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

PHILADELPHIA

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel		$6.50
No. 2 heavy melting steel	$5.00 to	5.50
No. 1 railroad wrought	7.00 to	7.50
Bundled sheets	4.00 to	4.50
Hydraulic compressed, new	4.50 to	5.00
Hydraulic compressed, old	4.00 to	4.50
Machine shop turnings	3.00 to	3.50
Heavy axle turnings	5.50 to	6.00
Cast borings (nom.)	3.00 to	3.50
Heavy breakable cast	8.00 to	8.50
Stove plate (steel works)	6.00 to	6.50
No. 1 low phos. heavy	9.50 to	10.00
Couplers and knuckles	6.50 to	7.00
Rolled steel wheels	6.50 to	7.00
No. 1 blast furnace (nom.)	3.00 to	3.50
Spec. iron and steel pipe	5.50 to	6.00
Shafting	10.00 to	11.00
Steel axles	11.50 to	12.00
No. 1 forge fire	5.50 to	6.00
Cast iron carwheels	8.50 to	9.00
No. 1 cast	8.00 to	8.50
Cast borings (chem.)	8.00 to	10.00
Steel rails for rolling	9.00 to	9.50

CLEVELAND

Per gross ton delivered consumers' yards:

No. 1 heavy melting steel	$6.50 to	$7.00
No. 2 heavy melting steel	5.75 to	6.25
Compressed sheet steel	5.75 to	6.25
Light bundled sheet stampings	4.50 to	5.00
Drop forge flashings	5.00 to	5.50
Machine shop turnings	2.50 to	3.00
Short shoveling turnings	4.00 to	4.50
No. 1 busheling	5.00 to	5.50
Steel axle turnings	5.00 to	5.50
Low phos., billet crops	9.00 to	10.00
Cast iron borings	3.50 to	4.00
Mixed borings and short turnings	3.50 to	4.00
No. 2 busheling	3.50 to	4.00
No. 1 cast	6.50 to	7.00
Railroad grate bars	5.00 to	5.50
Stove plate	5.00 to	5.50
Rails under 3 ft	8.50 to	9.00
Rails for rolling	8.50 to	9.00
Railroad malleable	7.25 to	7.50
Cast iron carwheels	7.00 to	7.50

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:

No. 1 heavy melting steel	$6.50 to	$7.00
No. 2 heavy melting steel		5.00
Scrap rails	6.75 to	7.25
New hydraul. comp. sheets		5.00
Old hydraul. comp. sheets		4.00
Drop forge flashings		5.00
No. 1 busheling		5.00
Hvy. steel axle turnings		6.00
Machine shop turnings	4.00 to	4.50
Knuckles and couplers		10.00
Coil and leaf springs		10.00
Rolled steel wheels		10.00
Low phos., billet crops	10.00 to	10.50
Short shov. steel turnings	5.50 to	6.00
Short mixed borings and turnings	3.75 to	4.25
Cast iron borings	3.75 to	4.25
No. 2 busheling	3.50 to	4.00
Steel car axles	10.00 to	11.00
No. 1 machinery cast	10.00 to	11.00
No. 1 machinery cast		9.00
No. 1 cupola cast	8.25 to	8.75
Stove plate	6.50 to	7.00
Steel rails, 3 ft and under	8.75 to	9.25
Cast iron carwheels	8.00 to	9.00
Railroad malleable	7.00 to	7.50
Railroad malleable	7.00 to	7.50
Chemical borings	7.50 to	8.00

BIRMINGHAM

Per gross ton delivered consumers' yards:

Heavy melting steel	$7.00 to	$7.50
Scrap steel rails	7.00 to	7.50
Short shoveling turnings		4.00
Stove plate		6.00
Steel axles		9.00
Iron axles		9.00
No. 1 railroad wrought	4.50 to	5.00
Rails for rolling	8.00 to	8.50
No. 1 cast	7.50 to	8.00
Tramcar wheels		8.00
Cast iron borings, chem.		8.50

ST. LOUIS

Per gross ton delivered consumers' yards:

Selected heavy steel	$5.50 to	$6.00
No. 1 heavy melting	4.25 to	4.75
No. 2 heavy melting	4.50 to	5.00
No. 1 locomotive tires	7.00 to	7.50
Misc. stand.-sec. rails	5.50 to	6.00
Railroad springs	6.50 to	7.00
Bundled sheets	2.75 to	3.25
No. 2 railroad wrought	4.25 to	4.75
No. 1 busheling	4.00 to	4.25
Cast iron borings and shoveling turnings	2.75 to	2.25
Axle turnings	7.00 to	7.50
Rails for rolling	6.00 to	6.50
Machine shop turnings	1.50 to	2.00
Heavy turnings	3.00 to	3.50
Steel car axles	8.25 to	8.75
Iron car axles	11.00 to	11.50
Wrot. iron bars and trans	5.00 to	5.50
No. 1 railroad wrought	5.50 to	6.00
Steel rails less than 3 ft	8.50 to	9.00
Steel angle bars	6.00 to	6.50
Cast iron carwheels	5.00 to	5.50
No. 1 machinery cast	6.50 to	7.00
Railroad malleable	4.00 to	4.50
No. 1 railroad cast	5.75 to	6.25
Stove plate	5.50 to	6.00
Relay, rails, 60 lb. and under	16.00 to	16.50
Relay, rails, 60 lb. and over	20.00 to	21.00
Agricult. malleable	5.00 to	5.50

NEW YORK

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	$2.85 to	$3.00
No. 2 heavy melting steel		1.50
Heavy melting steel (yard)		1.50
No. 1 hvy. breakable cast	4.50 to	4.75
Stove plate (steel works)	2.25 to	2.75
Machine shop turnings	0.50 to	1.00
Short shoveling turnings	0.50 to	1.00
Cast borings	0.50 to	1.00
No. 1 blast furnace	0.50 to	1.00
Steel car axles	8.00 to	8.50
Spec. iron and steel pipe	2.00 to	2.50
Forge fire		3.25
No. 1 railroad wrought	4.00 to	4.50
No. 1 yard wrought, long	3.25 to	3.50
Rails for rolling	5.00 to	5.50
No. 1 cast	5.00 to	5.25
No. 2 cast	4.00 to	4.50
Stove plate (foundry)		3.75
Malleable cast (railroad)	3.50 to	4.00
Cast borings (chemical)	6.00 to	6.50

Per gross ton, delivered local foundries:

No. 1 machinery cast	$7.50 to	$8.00
No. 1 hvy. cast (cupola size)	7.50 to	8.00
No. 2 cast	4.00 to	4.50

BOSTON

Dealers' buying prices per gross ton:

No. 1 heavy melting steel	$3.35 to	$3.50
Scrap T rails		3.35
Machine shop turnings	0.80 to	1.00
Cast iron borings		1.00
Bundled skeleton, long	2.00 to	2.10
Forge flashings	3.00 to	3.50
Blast furnace scrap	0.90 to	1.00
Forge scrap	3.00 to	3.25
Shafting	9.50 to	10.00
Steel car axles	9.00 to	9.50
Wrought pipe	4.00 to	4.25
Rails for rolling	4.50 to	5.00
Cast iron borings, chemical	7.00 to	7.25

Per gross ton delivered consumers' yards:

Textile cast	$7.00 to	$7.50
No. 1 machinery cast	7.50 to	8.00
Stove plate	5.00 to	5.25
Railroad malleable	10.50 to	11.00

CINCINNATI

Dealers' buying prices per gross ton:

Heavy melting steel	$4.50 to	$5.00
Scrap rails for melting	5.00 to	5.50
Loose sheet clippings	1.00 to	1.50
Bundled sheets	3.25 to	3.75
Cast iron borings	2.75 to	3.25
Machine shop turnings	2.50 to	3.00
No. 1 busheling	3.75 to	4.25
No. 2 busheling	2.00 to	2.50
Rails for rolling	6.00 to	6.50
No. 1 locomotive tires	7.00 to	7.50
Short rails	8.00 to	8.50
Cast iron carwheels	6.00 to	6.50
No. 1 machinery cast	7.50 to	8.00
No. 1 railroad cast	7.00 to	7.50
Burnt cast	3.25 to	3.75
Stove plate	3.25 to	3.75
Agricultural malleable	6.50 to	7.00
Railroad malleable	7.00 to	7.50

DETROIT

Dealers' buying prices per gross ton:

Hvy. melting steel	$4.50 to	$5.00
Borings and short turnings	1.75 to	2.25
Long turnings	1.50 to	2.00
No. 1 machinery cast	7.00 to	7.50
Automotive cast	8.50 to	9.00
Hydraul. comp. sheets	3.50 to	4.00
Stove plate	3.25 to	3.75
New No. 1 busheling	4.00 to	4.50
Old No. 2 busheling	1.25 to	1.75
Sheet clippings	1.50 to	2.00
Flashings	4.00 to	4.50

CANADA

Dealers' buying prices per gross ton:

	Toronto	Montreal
Heavy melting steel	$7.00	$6.00
Rails, scrap	7.00	6.00
No. 1 wrought	6.00	8.00
Machine shop turnings	2.00	2.00
Boiler plate	5.00	4.50
Heavy axle turnings	2.50	2.50
Cast borings	2.00	2.00
Steel borings	2.00	2.00
Wrought pipe	2.00	2.00
Steel axles	7.00	9.00
Axles, wrought iron	7.00	11.00
No. 1 machinery cast	12.50	10.00
Stove plate	10.00	8.00
Standard carwheels	10.00	8.50
Malleable	10.00	8.00

Warehouse Prices for Steel Products

PITTSBURGH

	Base per Lb.
Plates	2.85c.
Structural shapes	2.85c.
Soft steel bars and small shapes	2.60c.
Reinforcing steel bars	2.60c.
Cold-finished and screw stock—	
Rounds and hexagons	2.95c.
Squares and flats	3.45c.
Hoops and bands, under ¼ in.	2.95c.
Hot-rolled annealed sheets (No. 24), 25 or more bundles	3.15c.
Galv. sheets (No. 24), 25 or more bundles	3.65c.
Hot-rolled sheets (No. 10)	3.10c.
Galv. corrug. sheets (No. 28), per square (less than 3750 lb.)	$3.74
Spikes, large	2.50c.
Small	2.75c. to 2.90c.
Boat	3.00c.
Track bolts, all sizes, per 100 count	70 per cent off list
Machine bolts, 100 count	70 per cent off list
Carriage bolts, 100 count	70 per cent off list
Nuts, all styles, 100 count	70 per cent off list
Large rivets, base per 100 lb.	$3.00
Wire, black, soft ann'l'd, base per 100 lb.	2.75
Wire, galv. soft, base per 100 lb.	3.20
Common wire nails, per keg	2.35
Cement coated nails, per keg	2.35

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applied to orders of 400 to 999 lb.

CHICAGO

	Base per Lb.
Plates and structural shapes	2.60c.
Soft steel bars	2.75c.
Reinforcing bars, billet steel	1.65c. to 1.75c.
Rail steel reinforcement	1.45c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons	2.60c.
Flats and squares	2.50c.
Bands, ¾ in. (in Nos. 10 and 12 gages)	2.95c.
Hoops (No. 14 gage and lighter)	3.50c.
Hot-rolled annealed sheets (No. 22)	3.55c.
Galv. sheets (No. 24)	4.10c.
Hot-rolled sheets (No. 10)	3.20c.
Spikes (⅜ in. and lighter)	3.15c.
Track bolts	4.30c.
Rivets, structural	3.75c.
Rivets, boiler	3.75c.
	Per Cent Off List
Machine bolts	70
Carriage bolts	70
Coach and lag screws	70
Hot-pressed nuts, sq., tap. or blank	70
Hot-pressed nuts, hex., tap. or blank	70
Hex. head cap screws	80
Cup point set screws	70 and 10
Flat head bright wood screws	52½
Spring cotters	60
Stove bolts	80
Rd. hd. tank rivets, 7/16 in. and smaller	65
Wrought washers	$4.50 off list
No. 8 black ann'l'd wire, per 100 lb.	$3.45
Com. wire nails, base per keg	2.30
Cement c't'd nails, base per keg	2.30

NEW YORK

	Base per Lb.
Plates and struc. shapes	2.70c. to 3.10c.
Soft steel bars, small shapes	2.70c. to 3.10c.
Iron bars	3.24c.
Iron bars, Swed. charcoal	6.00c. to 6.50c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.20c.
Flats and squares	3.80c.
Cold-roll. strip, soft and quarter hard	4.95c.
Hoops	3.30c.
Bands	3.30c.
Hot-rolled sheets (No. 10)	3.00c. to 3.25c.
Hot-rolled ann'l'd sheets (No. 24*)	3.50c.
Galvanized sheets (No. 24*)	4.60c.
Long terne sheets (No. 24)	4.50c.
Standard tool steel	12.00c.
Wire, black annealed (No. 10)	3.60c.
Wire, galv. annealed (No. 10)	4.05c.
Tire steel, ½ x ⅛ in. and larger	3.40c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.75c.
Open-hearth spring steel, bases	4.50c. to 7.00c.
Common wire nails, base, per keg	$2.60
	Per Cent
Machine bolts, cut thread	Off List
¾ x 6 in. and smaller	65 to 65 and 10
1 x 30 in. and smaller	65 to 65 and 10
Carriage bolts, cut thread:	
½ x 6 in. and smaller	65 to 65 and 10
¾ x 20 in. and smaller	65 to 65 and 10
Boiler Tubes	Per 100 Ft.
Lap-welded, 2-in.	$18.05
Seamless welded, 2-in.	19.23
Charcoal iron, 2-in.	24.94
Charcoal iron, 4-in.	63.65

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.25c.
Bars, soft steel or iron	3.00c.
Cold-fin. rounds, shafting, screw stock	3.50c.
Hot-rolled annealed sheets (No. 24)	3.80c.
Galv. sheets (No. 24)	4.35c.
Hot-rolled sheets (No. 10)	3.45c.
Black corrug. sheets (No. 24)	5.85c.
Galv. corrug. sheets	4.40c.
Structural rivets	4.00c.
Boiler rivets	4.00c.
	Per Cent Off List
Tank rivets, ⅞ in. and smaller, 100 lb. or more	65
Less than 100 lb.	60
Machine bolts	70
Carriage bolts	70
Lag screws	70
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more	70
Less than 200 lb.	60
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more	70
Less than 200 lb.	60

PHILADELPHIA

	Base per Lb.
*Plates, ¼-in. and heavier	2.10c.
*Structural shapes	2.10c.
*Soft steel bars, small shapes, iron bars, layered bands	2.10c.
Reinforc. steel bars, sq., twisted and deform.	2.30c.
Cold-fin. steel, rounds and hex.	3.35c.
Cold-fin. steel, sq. and flats	3.85c.
*Steel hoops	2.65c.
*Steel bands, No. 12 to 3/16 in., incl.	2.40c.
Spring steel	5.00c.
Hot-rolled annealed sheets (No. 24)	2.75c.
Galvanized sheets (No. 24)	3.75c.
*Hot-rolled and annealed sheets (No. 10)	2.85c.
Diam. pat. floor plates, ¼ in.	5.00c.
Swedish iron bars	5.60c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

*Base prices for 15,000-lb. orders; extra apply for smaller quantities.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	2.95c.
Soft steel bars	2.75c.
Reinforc. steel bars	1.75c. to 1.95c.
Cold-fin. rounds and hex.	2.95c.
Cold-fin. flats and sq.	3.45c.
Flat rolled steel under ¼ in.	3.00c.
Cold-finished strip	5.55c.
Hot-rolled annealed sheets (No. 24)	3.25c.
Galvanized sheets (No. 24)	3.75c.
Hot-rolled sheets (No. 10)	3.00c.
Black ann'l'd wire, per 100 lb.	$2.75
No. 9 galv. wire, per 100 lb.	3.90
Com. wire nails, base per keg	2.35

*Net base, including boxing and cutting to length.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	2.85c.
Bars, soft steel or iron	2.90c.
New billet reinforc. bars	2.80c.
Rails steel reinforc. bars	3.00c.
Hoops	3.90c.
Bands	3.20c.
Cold-fin. rounds and hex	3.20c.
Squares	3.75c.
Hot-rolled annealed sheets (No. 24)	3.75c.
Galv. sheets (No. 24)	4.25c.
Hot rolled sheets (No. 10)	3.30c.
Structural rivets	4.20c.
Small rivets	60 per cent off list
No. 9 ann'l'd wire, per 100 lb.	$3.00
Com. wire nails, base per keg (10 to 40 kegs)	2.65
Larger quantities	2.50
Cement c't'd nails, base 100-lb. keg	2.95
Chain, per 100 lb.	10.25
	Net per 100 Ft.
Seamless steel boiler tubes, 2-in.	$17.50
4-in.	36.00
Lap-welded steel boiler tubes, 2-in.	16.50
4-in.	34.50

BUFFALO

	Base per Lb.
Plates and struc. shapes	3.20c.
Soft steel bars	2.95c.
Reinforcing bars	2.95c.
Cold-fin. flats and sq.	3.50c.
Rounds and hex.	3.00c.
Cold-rolled strip steel	5.25c.
Hot-rolled annealed sheets (No. 24)	3.70c.
Galv. sheets (No. 24)	4.05c.
Bands	3.30c.
Hoops	3.95c.
Hot-rolled sheets (No. 10)	3.45c.
Com. wire nails, base per keg	$2.60
Black wire, base per 100 lb.	3.25

BOSTON

	Base per Lb.
Plates	*3.35c.
Structural shapes	*3.35c.
Soft steel bars, small shapes	*3.25c.
Reinforcing bars	3.10c. to 3.25c.
Iron bars—	
Refined	3.25c.
Best refined	4.60c.
Spring steel, open-hearth	5.00c.
Tire steel	4.50c. to 4.75c.
Bands	*3.75 to 4.25c.
Hoop steel	4.30c. to 5.40c.
Cold-rolled steel—	
Rounds and hex.	3.60c. to 4.15c.
Squares and flats	4.10c. to 5.35c.
Rivets, structural or boiler	4.80c.
	Per Cent Off List
Machine bolts	65
Carriage bolts	65
Lag screws	65
Hot-pressed nuts	65
Cold-punched nuts	65
Stove bolts	70 and 10

*Base price (250 to 999 lb.); less than 250 lb., add 50c. per 100 lb.; 1000 to 7999 lb., deduct 15c.; 8000 to 14,999 lb., deduct 25c.; 15,000 lb. and larger lots, deduct 35c.

PACIFIC COAST

	Base per Lb.		
	San Francisco	Los Angeles	Seattle
Plates and struc. shapes, ¼-in. and heavier	3.25c.	3.30c.	3.00c.
Soft steel bars	3.25c.	3.30c.	3.00c.
Reinforcing bars	3.00c.	3.00c.	3.00c.
Hot-rolled annealed sheets (No. 24)	3.95c.	4.20c.	4.50c.
Hot-rolled sheets (No. 10)	3.50c.	3.50c.	4.00c.
Galv. sheets (No. 24)	4.55c.	4.50c.	5.00c.
Struc. rivets, ⅝ in. and larger; less than 1000 lb.	5.00c.	5.00c.	4.00c.
Cold-finished steel			
Rounds	5.50c.	5.50c.	4.50c.
Squares and hexagons	6.75c.	6.75c.	5.75c.
Flats	7.25c.	7.25c.	6.75c.
Common wire nails, base per keg in less carloads	$2.90	$2.90	$3.00

Plates, shapes, bars, bands and hot-rolled sheets, No. 16 gage and heavier, subject to reductions for quantity. Cold-finished quotations based on 100 lb. minimum quantity.

Machine Tool Sales At Extreme Low in July

National Association's Index of Business Drops Considerably Below the June Figure

JULY was the poorest month this year in machine tool purchases by a considerable margin, the index figure of the National Machine Tool Builders' Association for sales last month having dropped to 25.3 from 37.2 in June. The association's three-months' moving average also declined sharply from 39.1 to 33.8 at the end of the preceding month.

Shipments rose slightly, from 22.3 in June to 26.6 in July, leaving the index of unfilled orders at 75.7, or 2.8 times shipments.

Discouraging as is this report, the picture thus far in August has not changed. There is no improvement either in sales or inquiries. However, the trade is hopeful that encouraging signs in some lines of industry will eventually result in action on long-delayed prospective machine tool purchases.

About $50,000 worth of used machine tools have been bought in New York for shipment to a South American country.

NORTH ATLANTIC

Commanding Officer, Watervliet Arsenal, Watervliet, N. Y., asks bids until Aug. 25 for quantity of alloy steel forgings (Circular 6).

Woodworkers Electric Machinery Corpn., 225 East 120th Street, New York, manufacturer of electric-operated woodworking equipment, has leased building at 436-38 Barretto Street, Bronx, on site 50 x 100 ft., and will occupy for plant.

Jean Machine Corpn., New York, has been organized by Charles W. Jean, 116 Nassau Street, New York, and James W. Johnson, 294 Bronxville Road, Bronxville, N. Y., to manufacture machinery and mechanical equipment.

Best Foods, Inc., 88 Lexington Avenue, New York, manufacturer of food products, is considering new addition to branch plant at 1900 Bryant Street, San Francisco. Cost about $100,000 with equipment. Work will begin in about 60 days.

Signal Supply Officer, Army Base, Brooklyn, asks bids until Aug. 26 for quantity of wire in lots of 500,000 to 1,500,000 ft. (Proposal 5); for control and amplifier units (Proposal 4).

Advance Pressure Casting, Inc., Brooklyn, has leased building at 34 North Fifteenth Street, and will occupy for plant.

Foster-Wheeler Corpn., 165 Broadway, New York, manufacturer of power plant and oil refinery equipment, has expanded production to include line of air-conditioning machinery, primarily for account of companies making specialty of furnishing entire installations.

Department of Mental Hygiene, State Office Building, Albany, N. Y., asks bids until Aug. 24 for an electric generating unit for Kings Park State Hospital power station, Kings Park, N. Y.

International Printing Ink Corpn., 75 Varick Street, New York, has leased property at Toronto, Ont., and will install equipment for new branch plant. Proposed to have unit ready for service in September.

Otis Elevator Co., Yonkers, N. Y., has secured contract for 14 electric elevators for Oliver Building, Pittsburgh, now being remodeled, totaling $600,000. Company has also obtained contract for elevators in new post office, Newark, N. J., at $124,500.

Electro Hone Corpn., Albany, N. Y., has been organized by Natale Mirabile, 65 South Lansing Street, and Herman S. Caplan, 67 North Pine Street, both Albany, to manufacture tools and mechanical equipment.

Home Fuel Oil Co., 18 Palisade Avenue, Englewood, N. J., William G. Moore, general manager, soon takes bids for one and two-story bulk oil storage and distributing plant on Forest Street. Cost about $60,000 with tanks and equipment.

Department of Commerce, Washington, has concluded arrangements for lease of tract of nine acres of land at Elizabeth, N. J., and soon begins construction of new radio broadcasting and range beam station, with main transmitting and receiving building, four steel towers, power equipment, etc. Cost about $60,000.

Mass Production Corpn., Baldwin Avenue and High Street, Jersey City, N. J., organized a few months ago to manufacture a new portable model typewriter and parts, has leased 6000 sq. ft. additional space in same building, owned by Durham-Duplex Razor Co., and will use for expansion in output.

United Stokers, Inc., Newark, N. J., care of M. Harold Higgins, 1172 Raymond Boulevard, representative, has been organized with capital of 2500 shares stock, no par value, to manufacture stokers and kindred equipment.

Motor Improvements, Inc., 365 Frelinghuysen Avenue, Newark, N. J., manufacturer of oil filtering equipment for automobiles and kindred products, is running on five-day-week basis with close to normal working quota. Company has booked a number of orders, including equipment for International Harvester Co., Chicago, for tractors.

Mongiello Brothers, Inc., 625 Communipaw Avenue, Jersey City, N. J., coal, has awarded contract to Fanning-Schuett Engineering Co., 4325 North Third Street, Philadelphia, for one-story coal storage and distributing plant on Woodward Street. Cost about $30,000.

Lidgerwood Mfg. Co., 775 Lidgerwood Avenue, Elizabeth, N. J., manufacturer of hoisting equipment, etc., is running on a double-shift schedule, reinstating large number of employees. Company has secured order for cableway equipment for Hoover Dam project, Boulder, Nev., as well as other Government contracts for electric windlasses and steering engines for five cruisers and army dredging machinery.

Public Seating Co., Trenton, N. J., recently organized to take over New Jersey School & Church Furniture Co., Artisan Avenue, manufacturer of metal chairs and seats, has resumed operations at plant and is giving employment to about 120 persons. This quota will be increased in near future.

E. J. Quigley, State House, Trenton, N. J., asks bids until Aug. 26 for steel guard rail cable, mud jack, electromatic dispatcher and other equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 30 for shaft revolution indicator equipment (Schedule 8521) for Philadelphia Navy Yard.

Philadelphia Beverage Co., Sixth Street and Clearfield Avenue, Philadelphia, is arranging fund for plant expansion, to include installation of tanks and auxiliary equipment for storage and distribution, brewing and bottling machinery and other equipment.

Kohr Custard Machinery Co., York, Pa., has been organized by Elton D. and P. M. Kohr, 1508 East Market Street, to manufacture special machinery for bakers, etc.

Reading Co., Reading Terminal, Philadelphia, has filed plans for one-story power substation at Prospect Avenue and Summit Street, to be used in connection with railway line electrification. Company has also asked bids on general contract for a similar power substation at Norristown, Pa.

Magnetic Windings Corpn., Easton, Pa., recently organized by Nathan Dinion, 1121 Lehigh Street, and associates, has leased local building for establishment of new plant for manufacture of magnetic and electric coils, transformer equipment, etc. Floyd S. Eberts, 102 Summit Street, Lock Haven, Pa., is interested in new company.

Worthington Pump & Machinery Corpn., Clinton and Roberts Streets, Buffalo, has filed plans for two-story addition. Estimated cost about $20,000 exclusive of equipment. Company headquarters are at 2 Park Avenue, New York.

Semco Mfg. Co., an interest of Segal Mfg. Co., 10-34 Forty-fourth Drive, Long Island City, N. Y., manufacturer of metal tables, etc., has taken over factory at 254 Court Street, Buffalo, and will occupy new plant for manufacture of metal enameled kitchen furniture and kindred equipment. I. A. Mossoff will be manager at Buffalo works.

Surge Milking Machine Co., Inc., Syracuse, N. Y., has been organized by George L. Babson, 1 Robin-Croft Road, and associates, to manufacture milking machines and kindred dairy equipment.

Willys-Morrow Co., Elmira, N. Y., automobile transmissions, gearing systems, etc., affiliated with Willys-Overland Co., Toledo, Ohio, will carry out improvement and expansion program, including installation of new equipment. Plant has been closed down for number of weeks and will resume production this month, giving employment to over 700 men.

SOUTH ATLANTIC

Board of District Commissioners, District Building, Washington, asks bids until Aug. 22 for quantity of metal laboratory equipment for public schools, including 57 laboratory tables, fume hoods, etc.

Chesapeake & Ohio Railroad Co., Richmond, Va., has asked bids on general contract for one and two-story, 75 x 110 ft., storage and distributing building at foot of Dunmore Street. Cost over $45,000 with equipment.

United States Engineer Office, Navy Building, Washington, asks bids until Sept. 7 for construction of one or two steel barges.

Air Conditioning Engineers, Inc., Reisterstown Road and Elgin Avenue, Baltimore, has been organized by Harry and O. Roland Read,

TENNESSEE

SHEETS

KEYSTONE COPPER STEEL

Black - Galvanized - Formed

Produced on modern mills and manufactured with an emphasis on quality, Tennessee Galvanized Sheets have built up an enviable reputation. Can be furnished in the following corrugations and crimps.

1¼" CORRUGATED
2" CORRUGATED
2½" CORRUGATED
2¾" CORRUGATED
2 V-CRIMPED
3 V-CRIMPED
4 V-CRIMPED
5 V-CRIMPED

WE ARE ALSO MANUFACTURERS OF TENNESSEE OPEN HEARTH BLUE ANNEALED, BLACK AND SPECIAL FINISH SHEETS

TENNESSEE COAL, IRON & RAILROAD COMPANY

General Offices: Brown-Marx Building, Birmingham, Ala.

Subsidiary of United States Steel Corporation

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R. R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Baltimore, to manufacture air-conditioning equipment.

Board of Trustees, Robinson Industrial Home for Boys, care of O. J. Egerton, Law Building, Norfolk, Va., treasurer, is completing plans for first unit of group of buildings on Kempsville Road, Princess Anne County, estimated to cost $140,000. Entire project will include industrial shops for vocational training and will cost over $1,000,000. Calrow, Browne & Fitzgibbon, Royster Building, Norfolk, are architects.

General Purchasing Officer, Panama Canal, Washington, asks bids until Aug. 26 for three pipe-threading and cutting machines, 18 machinists' bench vises, 10,000 railway tie plates, 6000 lb. steel track bolts, 10,000 lb. welding rods, brass and bronze pipe fittings, and other mechanical equipment (Schedule 2780).

Southern Public Utilities Co., Charlotte, N. C., plans extensions in transmission and distribution lines at Lincolnton, N. C., and vicinity, about 24 miles. Cost about $33,000 with equipment.

Growers Fertilizer Co., Fort Pierce, Fla., has work under way on one-story commercial fertilizer plant and plans early installation of equipment. Cost about $30,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 30 for four bench-type sensitive drills, motor-driven (Schedule 8526) for Brooklyn, Philadelphia, Mare Island and Puget Sound Navy Yards; for quantity plow steel wire rope (Schedule 8546) for Mare Island Navy Yard; for quantity of pressure vacuum gages, compound and duplex (Schedule 8524) for eastern and western yards; until Aug. 23 for four water-cooled, vertical type air compressors (Schedule 8523) for Opa-Locka, Grosse Ile, Roberston and Minneapolis.

Greater Miami Airport Association, Miami, Fla., R. V. Waters, chairman, is at head of project to construct large airport for airplanes and seaplanes on Biscayne Bay, Fla., using about 1100 acres of city-owned land. Project will include group of hangars, repair and reconditioning shops, administration building and other field units. Cost over $1,500,000 with equipment.

McClaren Rubber Co., Charlotte, N. C., manufacturer of automobile tires, has advanced production schedule at mill, adding a third eight-hour shift, making 24-hour day basis, with total of about 500 persons on payroll.

Division of Purchase, Sales and Traffic, Department of Agriculture, Washington, asks bids until Aug. 23 for three portable pneumatic drill steel sharpeners for Foxpark, Wyo., and Pacsteel, Cal. (Proposal 3346); for 12 air hammers for various locations (Proposal 3351).

Board of Public Works, Savannah Beach, Ga., plans installation of municipal waterworks, including elevated steel tank of 125,000 gal. capacity on 100-ft. tower, pumping machinery and auxiliary mechanical equipment.

CENTRAL DISTRICT

Wendell August Forge, Inc., Grove City, Pa., has been chartered by Wendell August and E. J. Fithian, Grove City, and Howard J. Chapin, Brockway, Pa., to take over and succeed to Wendell August Forge Co., manufacturer of aluminum and other metal forgings, which has recently completed new plant at first noted place. Company will concentrate production at Grove City plant, operating with capital of $100,000.

Sheffield Tool & Supply Co., Sheffield, Pa., manufacturer of tools and mechanical equipment, contemplates rebuilding of portion of plant, recently destroyed by fire. Loss about $35,000 with equipment.

Westinghouse Electric & Mfg. Co., East Pittsburgh, has secured contract from Navy Department for radio transmitting and receiving equipment, totaling about $100,000. Production will be carried out at radio products division plant at Chicopee Falls, Mass.

Reznor Mfg. Co., Mercer, Pa., manufacturer of stoves, parts, etc., has resumed production after curtailment for number of months, giving employment to about one-half normal working quota, which will be stepped up in near future.

National Metalloys Corpn., Pittsburgh, has been organized by I. A. Simon, 1060 Morewood Avenue, and Leon Falk, Jr., 1211 Farmers' Bank Building, to manufacture metal alloy specialties.

Odin Stove Mfg. Co., Erie, Pa., has resumed production on a full time schedule, reinstating large number of workers and bringing force up to regular quota.

Westinghouse Electric & Mfg. Co., East Pittsburgh, has awarded general contract to Rust Engineering Co., Koppers Building, Pittsburgh, for new four-story factory branch, storage and distributing plant at Mansfield, Ohio, 190 x 370 ft. Cost about $150,000 with equipment.

Reliance Electric & Engineering Co., 1088 Ivanhoe Road, Cleveland, manufacturer of electrical and mechanical equipment, has concluded arrangements for purchase of Cleveland Stoker Co., 6545 Carnegie Avenue, manufacturer of automatic coal burners for domestic service, and will operate as a subsidiary. Clarence L. Collens is president of purchasing company.

Arrow Tack & Nail Co., Cleveland, has been organized by Martin W. and W. J. Qualich, Society for Savings Building, to manufacture tacks, nails, screws and kindred products.

Dart Boats, Inc., 3026 Summit Street, Toledo, Ohio, is discontinuing the production of pleasure boats and in future will concentrate entire plant on manufacture of toys.

Department of Public Service, Columbus, Ohio, William P. Halenkamp, director, plans installation of pumping machinery, power equipment, conveying and other mechanical equipment in new sewage disposal plant on Frank Road; five units will be built with battery of tanks. Cost about $3,500,000. Bond issue will be arranged. Robert H. Simpson is city engineer. John H. Gregory, Johns Hopkins University, Baltimore, is consulting engineer.

Contracting Officer, Materiels Division Wright Field, Dayton, Ohio, asks bids until Aug. 23 for one fuel pump drive assembly (Circular 36); until Aug. 22 for 3000 running lamp assemblies (Circular 39); until Aug. 29 for 400 compass adapter plates (Circular 47), 500 oxygen connection assemblies (Circular 43), 30,000 ft. shock absorber cord (Circular 45); until Aug. 30 for quantity of airplane parts, including cowling forks, fairleads, etc. (Circular 51); 300 air-cooled engine heater covers (Circular 48); 50 venturi assemblies, discharge valve arms, discharge and vent pipes, discharge valve rods, discharge valve springs, vent valve springs, discharge valve spring washers, vent valve spring washers, tube assemblies, pipe plugs, etc. (Circular 49).

Joyce-Cridland Co., Linden Avenue, Dayton, Ohio, manufacturer of lift jacks and kindred mechanical products, has revised plans under way for new one-story plant, 90 x 325 ft., on Woodley Road. Cost about $75,000 with equipment. Structure will be owned by Dayton Hydraulic Co., and leased to first noted company. Hill-smith & Co., Winters Building, are architects-contractors.

McCurdy Mfg. Co., Ada, Ohio, S. M. McCurdy, president, plans establishment of sheet metal plant in one-story building, and will purchase tools and equipment at early date.

Board of Directors, Indiana State School for Feeble Minded, Butlerville, Ind., Charles A. McConnaele, Fort Wayne, Ind., superintendent, is having plans drawn for extensions and improvements in power house at institution, including installation of new equipment. Charles Bressman, Chamber of Commerce Building, Indianapolis, is consulting engineer.

American Airways, Inc., 122 East Forty-second Street, New York, has arranged lease for use of municipal airport at Indianapolis, for period of five years and plans installation of hangar, repair and service facilities in future.

Chicago, Milwaukee, St. Paul & Pacific Railroad Co., Chicago, is running with a full working quota at repair shops at West Clinton, Ind., reinstating all employees.

Board of Directors, Ball State Teachers' College, Muncie, Ind., plans three-story and basement arts building, 200 x 235 ft. Cost about $325,000 with equipment. George F. Schreiber, Architects and Builders Building, Indianapolis, is architect.

Homer Furnace Mfg. Co., Coldwater, Mich., manufacturer of heating furnaces, castings, etc., is running on full time, six-day week basis with regular working quota, and is operating a night shift for three nights each week.

Erie Enameling Co., Erie, Pa., is increasing production schedule and reinstating number of employees.

City Council, Cuyahoga Falls, Ohio, George D. Porter, mayor, is considering a municipal electric light and power plant, one-story, 60 x 100 ft., with installation to include Diesel oil engine-generating units, and auxiliary equipment. Cost about $300,000 with machinery.

General Motors Corpn., Detroit, is curtailing operations at branch plant at Oshawa, Ont., for a few weeks, and will make improvements in equipment and machinery, including parts replacements, etc. Proposed to have unit ready for assembling service about middle of September.

E. T. Barnum Iron & Wire Works, Inc., Detroit, has been organized to take over and expand business heretofore operated under name of E. T. Barnum, 511 Cass Street, manufacturer of iron products and wire goods. R. W. Yates, Bloomfield Hills, Detroit, is one of organizers of new company.

Crittall Casement Window Co., Detroit, has transferred its general offices and major manufacturing operations from Detroit to a new plant at 1224 Twenty-fourth Street, N.W., Washington. Detroit plant will be operating until the Washington plant is in full swing. Work now in progress in Detroit will be completed.

Universal Lubricator Co., 600 Fidelity Trust Building, Detroit, has been organized by William N. Hallanger, and associates, to manufacture lubricating equipment and devices.

MIDDLE WEST

United States Engineer Office, 333 North Michigan Avenue, Chicago, asks bids until Sept. 2 for electrical equipment for Dresden Island lock on Illinois River, including electric power, control and indicating equipment; lock signals; electric cable, connection boxes, etc.; miscellaneous electrical equipment (Circular 30).

American Ironing Machine Co., Algonquin, Ill., has been acquired by Barlow & Seelig Mfg. Co., Ripon, Wis., manufacturer of kindred equipment. Purchasing company will consolidate with organization and continue production at Algonquin works, where expansion program will be carried out.

Signal Corps Procurement District, 1819 West Pershing Road, Chicago, asks bids until Aug. 23 for quantity of battery clips, switchboard jacks, switchboard lamps, supporting brackets, gear and sleeve assemblies, ringer coils, switchboard connecting plugs, etc. (Circular 21).

Great Northern Railway Co., Railroad Building, St. Paul, Minn., is considering new power plant at Havre, Mont., with boilers equipped to use pulverized fuel. Cost about $100,000 with equipment. T. D. McMahon, address noted, is company architect.

City Council, Morris, Minn., has been authorized at special election to arrange for bond issue of $150,000, fund to be used for construction of a municipal electric light and power plant. Robert J. Torrens, Shubert Building, St. Paul, Minn., is consulting engineer.

City Council, Atlantic, Iowa, is considering extensions and improvements in municipal electric light and power plant and waterworks, including installation of additional equipment. Estimates of cost and surveys will be made by Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., consulting engineer.

Drying Systems, Inc., 1800 Foster Avenue, Chicago, manufacturer of mechanical drying equipment, will be affiliated with Drying Systems, Ltd., 629 Wellington Street, Ottawa, Ont., recently organized to manufacture similar machinery in Canada, including air-conditioning and baking equipment. Plant will be operated in Ottawa.

City Council, South Sioux City, Neb., is arranging for a bond issue of $100,000, fund to be used for a municipal electric light and power plant. W. E. Buell & Co., Insurance Exchange Building, Sioux City, Iowa, are consulting engineers.

Construction Service, Veterans' Administration, Washington, asks bids until Sept. 13 for refrigerating plant, electric distributing system, ventilating equipment, steel shelving, steel stairs and other mechanical equipment in connection with new institution at Fort Lyon, Colo.

Water and Light Department, Grand Rapids, Minn., has plans for one-story and basement equipment storage, distributing and repair building, 48 x 100 ft., at Second Avenue East and Fifth Street.

Superior Steel Products Co., Milwaukee, has completed transfer of plant and offices to 2058 South Fifty-fourth Street, where it is occupying part of works of Kempsmith Mfg. Co. Improvement in business has resulted in enlargement of force of Superior company and extension of schedules to 9-hr., 5½ days per week.

Solar Corpn., Beaver Dam, Wis., sustained heavy loss by fire Aug. 8, three structures of storage battery manufacturing plant being wrecked. Rebuilding work will be instituted at once.

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City of Milwaukee Sewerage Commission, Jones Island, Milwaukee, closes bids Aug. 18 for furnishing three submerged vertical driven centrifugal pumps, one 1300 g.p.m., one 1950 g.p.m. and one 3000 g.p.m., with vertical motors assembled complete with discharge line brought up to top of pit. Lydia Bauer is secretary of commission.

MacWhyte Co., Kenosha, Wis., has received contract for furnishing 700 tons of 7/16-in. wire cable for Mississippi River revetment construction projects.

Wisconsin Telephone Co., 722 North Broadway, Milwaukee, has announced new projects in Milwaukee area during next 12 months, estimated to cost $1,415,000. George F. Crowell is chief engineer.

Milwaukee Stamping Co., 824 South Seventy-second Street, Milwaukee, reports substantial improvement in orders in advance of seasonal upturn and has increased working force 20 per cent since July 1. Improvement is attributed to low stocks of jobbers and dealers by Edwin B. Bartlett, president.

Snap-On Tools, Inc., of Kenosha, Wis., has booked substantial order for mechanics' tools for navy aircraft factory at Philadelphia and is increasing working force and operating hours.

Board of Harbor Commissioners, Milwaukee City Hall, has accepted low bid of Great Lakes Dredge & Dock Co., 740 North Plankinton Avenue, Milwaukee, for constructing 1950 lin. ft. of sheet steel bulkhead in south Kinnickinnic River basin at $124,000. Board also has placed contract with Walter H. Knapp, Inc., 3202 North Thirty-seventh Street, Milwaukee, for constructing 6315 lin. ft. of standard railroad track with four No. 8 turnouts, in south harbor tract at $30,000. K. A. Albrecht is secretary of board.

NEW ENGLAND

Atlas Sheet Metal Co., Ashland, Mass., has leased factory on Front Street, formerly occupied by Walan Webbing Co., for manufacture of steel and metal specialties.

Seth Thomas Clock Co., Thomaston, Conn., is considering new one-story addition on South Main Street. Cost about $40,000 with equipment.

Shackle Corpn., Providence, R. I., has been organized by George M. Davis and Horace H. Weller, 55 Congdon Street, to manufacture mechanical equipment and devices.

Litchfield Shuttle Co., Litchfield, Mass., manufacturer of shuttles and kindred textile mill equipment, is arranging for resumption of operations, following shutdown for number of weeks. Employment will be given to about 100 persons.

Board of Selectmen, Greenfield, Mass., plans construction of steel stand pipe for water supply system. Weston & Sampson, 14 Beacon Street, Boston, are consulting engineers.

John T. Cottrell Co., Pawtucket, R. I., manufacturer of metal products, has made application for permission to zoning board for construction of two one-story buildings on Division Street, to be used for metal-working plant and storage and distributing service.

United States Rubber Co., Naugatuck, Conn., has resumed production at local plant, giving employment to over 2500 operatives.

Construction Service, Veterans' Administration, Washington, asks bids until Aug. 30 for sewage treatment plant at institution at Bedford, Mass., including tanks, filters, settling basins, chlorinator equipment and other machinery.

Acme Tool & Gage Co., Inc., Pawtucket, R. I., has been chartered by James F. Pullan, 516 Pawtucket Avenue, and associates, to manufacture special tools, electric refrigerator equipment, oil burners, etc. Company has leased building at 121 Bacon Street for local works. Thomas K. Fisher, Pawtucket, will be an official of new company.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 23 for one four-wheel gasoline-driven tractor (Schedule 8525) for Newport, R. I., Navy Yard.

SOUTH CENTRAL

Constructing Quartermaster, Maxwell Field, Montgomery, Ala., asks bids until Aug. 22 for shop equipment, including welding table and blocks, gas-fired forge, gas-fired over furnace, anvil block, dust collector, acid-proof chemical tanks, radiator test tank, etc.

Gulf, Mobile & Northern Railroad Co., Mobile, Ala., has reopened local repair shops, following shutdown since July, 1931, reinstating about 275 men.

M. J. Epley, Canal Bank Building, New Orleans, La., is at the head of project to construct and operate plant for production of Fuller's earth in vicinity of Mobile, Ala., where land is being leased. Mining, refining, storage and distributing units will be built, with capacity of about 800 tons per month.

City Council, Poplarville, Miss., plans immediate call for bids for municipal electric light and power plant, and electric-operated pumping station for water system. Cost about $100,000 with equipment. Vinson B. Smith, Jr., Gulfport, Miss., is architect and engineer.

American Net & Twine Co., Blue Mountain, Ala., soon begins superstructure for two one-story additions, 80 x 107 ft., and 50 x 75 ft. Cost about $55,000 with machinery.

Rockwood Canning Co., Rockwood, Tenn., is planning purchase of electric refrigerating equipment for installation at plant.

United States War Department, Washington, will have plans drawn in near future for new hangars with repair and reconditioning facilities at Barksdale Field, Shreveport, La., for which fund of $350,000 has been authorized. Constructing Quartermaster will be in charge.

SOUTHWEST

Sterling Machinery Co., 2307 Holmes Street, Kansas City, Mo., has awarded general contract to F. A. Taylor, 408 East Fourteenth Street, for extensions and improvements in one and one-half story plant, 50 x 104 ft., at 411 Southwest Boulevard. Fred C. Pickett, 2954 Lockridge Avenue, is architect.

University City and United States Service Car Co., 208 North Broadway, St. Louis, has leased three-story building, 70 x 110 ft., to be erected on Locust Street, for new car terminal, service and repair department. Cost over $75,000 with equipment. General contract let to Worthington & Craven, 4390 Lindell Boulevard.

City Council, St. Charles, Mo., has preliminary surveys under way for municipal electric light and power plant, to cost about $300,000 with equipment. Russell & Axon, 6200 Easton Avenue, St. Louis, are consulting engineers.

American Steel Products Corpn., Fort Smith, Ark., formerly at Dearing, Kan., has been reorganized with capital of $25,000, and has taken over property at 2913 North Sixth Street, where plant will be operated for manufacture of steel culverts, steel bridge flooring and kindred products. John A. Logan is president.

Ozark Hardwood Lumber Co., 1212 West Florida Street, Springfield, Mo., has awarded general contract to W. E. Ferguson, Springfield, for rebuilding portion of lumber and woodworking mill, recently damaged by fire. Cost reported at $25,000 with equipment.

Sieloff Packing Co., 4329 Natural Bridge Avenue, St. Louis, meat packer, has filed plans for three-story and basement addition, 80 x 170 ft., including improvements in present plant. General contract recently let to A. H. Haeseler Building & Contracting Co., 2346 Palm Street. Cost about $70,000 with equipment. H. W. Tohtz, 5887 Wabada Avenue, is mechanical engineer.

Clarksville Ice Co., Clarksville, Ark., plans construction of electric-operated ice-manufacturing plant on East Main Street. Cost about $50,000 with machinery.

Common Council, Woodston, Kan., is considering installation of pumping machinery and auxiliary equipment in connection with extension in municipal water system. E. T. Archer & Co., New England Building, Kansas City, Mo., are consulting engineers.

Cameron County Irrigation District No. 19, Harlingen, Tex., plans installation of electric-operated pumping machinery and other power and mechanical equipment in connection with proposed irrigation system. Bonds for $950,000 for project have been approved.

Texas Railway Equipment Co., Austin, Tex., has been organized by Herman Brown and F. L. Dahlstrom, Austin, to manufacture railway supplies and equipment.

Humble Oil & Refining Co., Houston, Tex., has work under way on extensions and improvements in oil refining plant at Ingleside, Tex., to include installation of stills, storage and distributing facilities, and other equipment.

Douthitt & Gillespie, Avoca, Tex., are considering rebuilding of portion of cotton ginning plant, recently damaged by fire. Loss about $25,000 with machinery.

Board of Education, Rusk, Tex., will soon have plans drawn for new high school and plans manual training department. Bonds for $75,000 have been authorized.

PACIFIC COAST

Imperial Products Co., care of Carl M. Einhart, 279 East Foothill Boulevard, Arcadia, Cal., recently organized by Mr. Einhart and associates, has leased tract of over 800 acres of land near Salton Sea, Imperial Valley district, as site for new plant for manufacture of dry ice (solid carbon dioxide), with initial capacity of 10 tons daily. Mineral deposits at Salton Sea will be used for raw materials and plant for production installed. Cost over $100,0000 with machinery.

Fallbrook Public Utility District, Fallbrook, Cal., plans installation of pumping plant and system for water supply from Santa Margarita River. Bonds for $25,000 voted for work.

Willard Storage Battery Co., 5700 East Ninth Street, Los Angeles, manufacturer of electric batteries, has adopted capacity production schedule of 2000 battery units per day, with full working force in all departments.

Lund Automatic Weighing, Inc., Los Angeles, care of Lloyd Wright, 1125 Board of Trade Building, has been organized by E. Lund and Herschel B. Green, capital $250,000, to manufacture weighing equipment and devices.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 23 for quantity of files (Schedule 8492), and 150 pressure lubricating guns (Schedule 8505) for Mare Island, Cal., Navy Yard.

Bureau of Power and Light, Los Angeles, is arranging fund of $32,000,000 (application being made to Reconstruction Finance Corpn.), for construction of municipal electric light and power plant on waterfront, and for construction of steel tower transmission line from city limits to Hoover Dam, near Boulder, Nev.

Wenatchee Packing & Provision Co., Wenatchee, Wash., is considering rebuilding of food products packing plant, recently destroyed by fire. Loss about $40,000 with equipment.

City Council, St. Helens, Ore., is considering construction of a municipal electric light and power plant, using Diesel engine-generating units. Cost estimated at $225,000 with machinery. Committee has been appointed to investigate project.

Southwestern Portland Cement Co., Los Angeles, is resuming operations at mill at Victorville, Cal., following shutdown since June 15.

Bureau of Yards and Docks, Washington, will prepare plans in near future for extensions and improvements at Puget Sound Navy Yard, Bremerton, Wash., provided for in emergency relief bill recently passed by Congress, including: new traveling crane and tracks, $145,000; improvements in power plant, $116,000; improvements and extensions in navy yard proper, shops, buildings, etc., to make total fund of $611,000; also, for improvements and additions in power plant at torpedo station, $57,000.

Cream-O-Matic Freezer Corpn., Los Angeles, care of Von Herzen & Woods, Hollywood First National Bank Building, representative, has been organized by M. A. and Harry E. Mahoney, Los Angeles, to manufacture ice cream freezers and equipment.

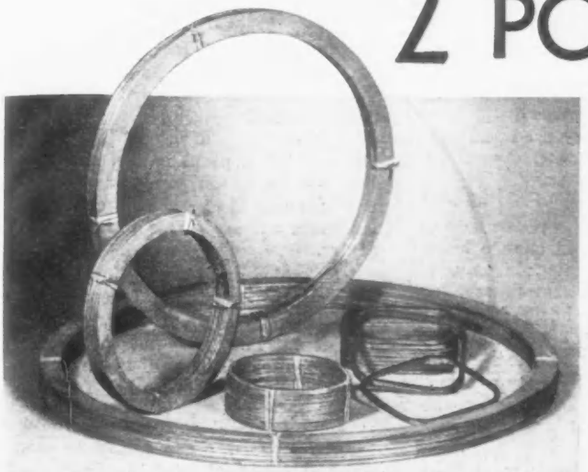
Vallejo Union High School District, Vallejo, Cal., will build a vocational training shop at new junior high school group, for which bids are being asked on general contract until Aug. 30. Cost about $230,000. Frederick H. Reimers, 333 Post Street, San Francisco, is architect; Robert L. St. John, 544 Market Street, San Francisco, mechanical engineer.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 30 for one motor-driven engine lathe (Schedule 8531) for San Diego, Cal., Navy Yard; one motor-driven grinding and polishing machine (Schedule 8519) one motor-driven wood-turning lathe (Schedule 8529) and one complete micro-metallographic equipment (Schedule 8530) for Puget Sound, Wash., Navy Yard.

State Board of Control, Portland Ore., is having plans prepared for extensions and improvements in power plant at State prison, Salem, including installation of additional equipment. F. W. Horstkotte, American Bank Building, Portland, is engineer.

City Council, Eureka, Cal., plans installation of electric-operated pumping machinery and other mechanical equipment for new municipal waterworks. Capacity of 5,000,000 gal. daily will be provided. C. C. Kennedy, Call Building, San Francisco, consulting engineer, will make surveys and estimates of cost.

Do You Know These 2 POWER SAVERS?



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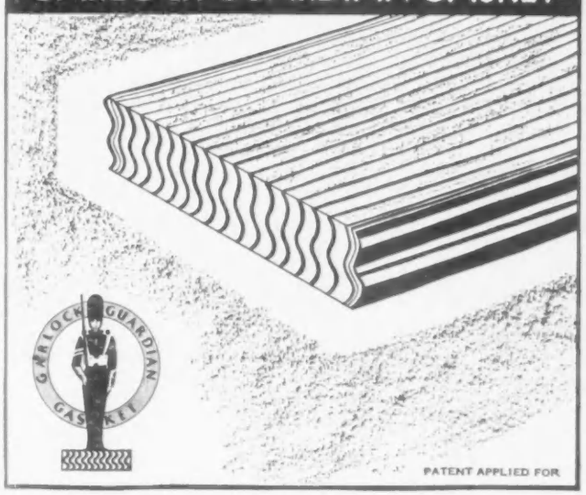

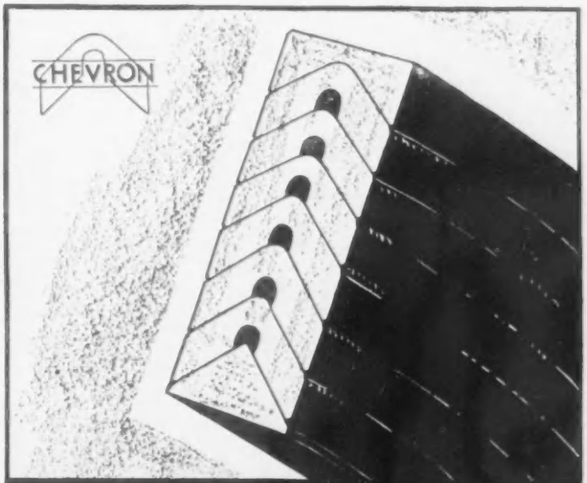

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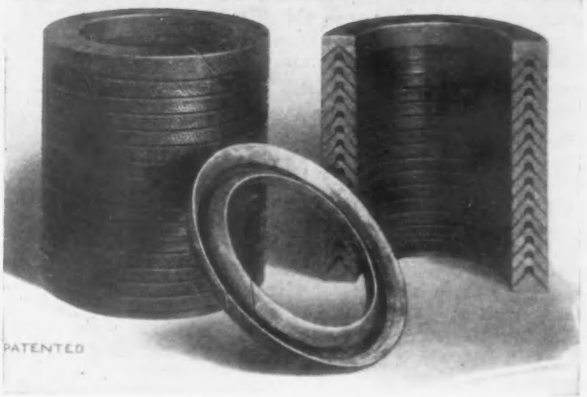

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GARLOCK

Basic Open-Hearth Furnace Charges

(Concluded from Page 252)

conditions is that its maximum value is 77.2 per cent of heavy melting.

If, however, heavy melting remained at $11 and iron cost $17, the value of this same sheet scrap would be $7.25, or 65.9 per cent of heavy melting.

For an additional example, assume still a $11 heavy melting scrap price, and it is desired to use rails, steel car wheels or steel locomotive axles. This class of heavy melting requires 37.5 per cent iron in the charge of proper melting. With $15 iron, its value is $11.35, while with $17 iron it is $11.52.

Tables or charts can be made up to cover each grade of scrap for the usual range of prices, so under any condition of the ratio of heavy melting prices to iron prices, the ratio of any desired scrap to heavy melting is indicated. The second chart is an example which has been made up to show the relationship between various grades of scrap and heavy melting. This chart, for the sake of illustration, designates the grade of scrap by the percentage of iron necessary properly to melt it. The kind of scrap which falls into each classification must be determined before this chart is of practical application.

The abscissæ represent the ratio of the price of pig iron to heavy melting scrap, the ordinates the ratio of the value of the scrap for which this particular chart was made to heavy melting price. If, for example, pig iron cost is $14 and heavy melting $10, the ratio of pig iron to heavy melting is 1.400. The ordinates represent the ratio of value of scrap to heavy melting. In a case of scrap requiring 54 per cent iron, the ordinate is 0.870, which gives a value for that scrap of $8.70.

Other Economies That Can Be Effected

In addition to having always instantly available the maximum price for any grade of scrap, there are other interesting economies that can sometimes be effected. From the chart showing the corrections for the amount of iron charged for the different silicon contents, it will be readily seen that substantial decreases in the quantity of iron required is obtained with increases of silicon. Thus 1.50 per cent silicon iron reduces by 20 per cent the amount of 1 per cent silicon iron required. With $17 iron and $11 heavy melting, the difference per ton of ingots for iron and scrap, charging all heavy melting, would be $0.40 in favor of the high silicon.

The use of off-grade basic and foundry irons, running 1.75 to 2 per cent silicon, has shown marked economies in cold charges. These irons can be purchased at a discount from basic, although at basic iron prices their use still represents an economy. The bad effect of high silicon on furnace bottoms and on increasing slag volume is greatly exaggerated, and its effect can be completely nullified when it is intentionally used and provided for.

Substituting Spiegeleisen for Pig Iron

Another interesting source of occasional economy for cold charge heats is the substitution of spiegeleisen, containing 20 per cent manganese for pig iron. In 75-ton basic furnaces, with oil fuel, 17.8 per cent spiegeleisen and 82.2 per cent steel scrap, averaging about No. 2 heavy melting, melts satisfactorily. Losses were the same as the usual 44 per cent iron and 56 per cent scrap mixture. With May 28 prices, i. e., basic iron, $15; spiegeleisen, $27, and scrap, $6, there is an advantage in using spiegeleisen of 23c. per ton of ingots [$15 × 0.44 + $6 × 0.56 — ($27 × 0.178 — $6 ×0.822)]. In addition to the advantage of cost, a high quality deep stamping steel was produced with sulphur in every case below 0.02 per cent.

The system of charging just outlined is generally satisfactory. One floor clerk on each shift can calculate the charges for about ten furnaces. In addition to calculating charges, it is occasionally necessary for him to make arbitrary iron additions to compensate for delays, interruptions, and slow working furnaces. The more success that a plant has in maintaining the maximum producing rate of the furnaces throughout a campaign, the more successful his procedure becomes.

The tables and charts shown as examples are from two different plants, both using 100-ton producer-gas-fired furnaces. They do not necessarily meet the conditions of furnaces of other design or using other fuel.

The author believes a much larger use of steel scrap is warranted in steel making, with all that this means for conservation of natural resources. A short concluding portion of the article devoted to this topic will appear next week.

Deficiteer, the Industrial Murderer

(Concluded from Page 249)

cles in the trade journals from 1925 on to show that to be a fact for the fabricating industry. To detail them here would be of no value. Not all sections of the country nor all industries suffered to the same degree. Those who had little trouble would not believe the warning given by those who had much and thus the whole country was brought under its blighting influence.

Judge Gary, in 1910, staged a number of meetings and called the attention of the world to the evils of destructive competition. He used a symbol showing Cooperation as the phoenix rising from the ashes of Destructive Competition. Today destructive competition is more firmly entrenched than ever. Mr. Schwab says: "Salesmanship must be based primarily upon the determination to realize a legitimate profit on every sale, for based on any other procedure, salesmanship degenerates into peddling." There is more peddling today than when Mr. Schwab wrote those words to the American Institute of Steel Construction.

Other contributing causes of the depression are being, or have been, greatly improved, such as exorbitant loans on buildings, selling stocks on the basis of possible future earnings, selling bonds that have little or no bond value, etc., etc.

The economist is sure that his view of the cause of our troubles is correct; the minister knows that he has the right formula; the internationalist can show the relation between our troubles and the maladjustment of the balance of the world; the tariff specialist knows it to be the source of all our problems, etc. Most of them are right to a certain degree, but if all of their cure-alls were put into force except that we still had the profitless selling that was current from 1925 to 1929, most of our industries could not even make a start at recovery. There is nothing on which they can build except profits.

Planning for Profits on All Transactions

Over-production has been the scapegoat and the alibi of the depression but the science of distribution is at fault and not over-production. It will take scientific planning to make possible the marketing of the necessities of proper living. According to the Federal Reserve Bank of New York, over or under-production of all manufactures in comparison with current demand has never been in excess of 5 per cent at any time since 1919.

At present there are millions of people who want better things and are willing to pay the price, but who cannot do so because of the complicated method of exchanging labor for what they desire. There should be a way

makes good steel better

The use of alloy steels is on the increase! More chrome, vanadium, nickel and manganese steel is being used every day. It is more imperative than ever before that mills produce clean material—uniform material—material of the highest quality.

Many manufacturers of alloy steels have found the segregation in them equal to plain carbon steel. Even more subject to seams. As the final ladle addition to insure a dependable product at lower cost they use Ferro Carbon Titanium.

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of recording desires and then translating them into work.

You cannot secure adequate distribution to satisfy these needs when that distribution is governed by destructive competition. Suppose the City of New York had a number of competing telephone companies and each was allowed to charge what it pleased. Chaos would ensue. As a public necessity the telephone corporation is given certain privileges and regulations. It can charge enough to give good service, pay an interest on the investment, and have enough left for improvements. This is a rational provision and we have cheap and adequate distribution.

Housing is also a public utility. Profits for the builder as well as for other lines of business are a public necessity, without which there can be no prosperity. A profit on every transaction must be an enforceable requirement, for the greedy and the parasitic will not cooperate unless they must. The government should officially recognize the destroyer of profits as a public enemy.

Any public utility properly organized and managed could make money at the present rates on a normal volume of business, but the fabricating industry and nearly all those that do not have the right of self-government are delivering goods at the cost of material and labor. The more they do the worse off they are.

The anti-trust laws are making trusts because the large corporations can make their money on products that the small corporations do not handle, and lose money on competitive products. The "deficiteer" is in all ranks from the small irresponsible business, that must cut prices to be able to get orders, to the largest corporation that feels it necessary to cut prices to build up its output. The result is that "misery is widespread in a time, not of scarcity, but of abundance." Our large corporations should have had the foresight to take the lead in demanding a profit on all transactions.

If our distribution were as thoroughly coordinated as our production, we would plan for sufficient profits to meet the expenses of the government, the building up of industry, and the increasing necessities of the people. Without this our other efforts will be in vain.

Porcelain Enamel Institute, 612 North Michigan Avenue, Chicago, has created a committee on architecture to cooperate with architects and their associations in the development of porcelain enamel on metal for use in modern construction and design. Bennett Chapple, vice-president, American Rolling Mill Co., Middletown, Ohio, has been appointed chairman.

X-Ray Inspection of Welded Pressure Vessels

(Concluded from Page 255)

characteristics will automatically be maintained constant.

The electrical circuit of the machine is made through an oil-immersed magnet switch which makes possible the use of remote control apparatus and relays. An automatic timing switch is included, so that the operator may turn the machine on, set the timing switch and attend to other duties during the exposure time. This permits closer duplication of exposure time and assures more uniform results through accurate control.

Differing from an ordinary circuit breaker, the overload relay carries a low current and is capable of fine adjustment. It breaks the circuit through a magnet switch, shutting the machine off if a sudden surge of current from any source places an undue strain on the X-ray tube. Likewise, it protects the operator as it "kicks out" immediately if a person accidentally comes in contact with the high-voltage equipment.

Accurate determination of voltage is desirable, since an overload on the tubes greatly lessens their life. This is taken care of by meters on the control board and by a sphere gap actuated by a small crank located at the control panel for accurate measuring of the voltage in the high potential circuit.

It is desirable to have the path of the X-rays completely inclosed from the tube to the steel drum, since a phenomenon of scattered and secondary radiation is observed when X-rays hit a heavy object. An adjustable lead-lined portal is provided for this purpose, insuring better definition.

To accommodate vessels of different diameters the entire drum can be raised or lowered by means of two synchronously-driven screws, located at either end of the drum, operated by an electric motor.

In order that the sharpest possible shadow may be cast, it is desirable to hold the film as close to the weld as possible. This is done in either of two ways. A magnetic type of holder, permitting a universal adjustment of the X-ray plate, or a mechanical type is used, depending upon the immediate problem at hand.

Films are dried in a special film dryer equipped with a heater which lessens the time required for finishing the film. The dryer also acts as a ventilator, since its exhaust is discharged outside through a light-proof baffle. The room also is equipped with dark room lamps with different types of filters and X-ray film illuminators.

The entire X-ray unit was designed and built by the Kelley-Koett Mfg. Co., Covington, Ky., to conform to the particular requirements of the Henry Vogt Machine Co.

Trade Notes

Babcock & Wilcox Co., New York, has appointed A. M. Castle & Co., Chicago, as distributer in the Chicago and Pacific Coast territories. In the latter territory A. M. Castle & Co. will be exclusive distributer for B & W tubes, with the exception that C. C. Moore & Co., agents for Babcock & Wilcox, will continue to sell and service retubing jobs for B & W and Stirling boilers.

Bryant Machinery & Engineering Co., 400 West Madison Street, Chicago, has appointed Joseph Monahan, 321 Lake Michigan Drive, Grand Rapids, Mich., exclusive agent for western Michigan to represent the lines of machinery distributed by the Bryant organization.

Youngstown Sheet & Tube Co., Youngstown, has contracted with Surface Combustion Corpn., Toledo, for installation at the former's Indiana Harbor, Ind., plant of three continuous walking beam furnaces for heating packs and pairs.

Mills Co., Cleveland, metal partition manufacturer, has appointed L. J. Carroll & Associates, 219 Liberty Building, Bridgeport, Conn., its Connecticut representative.

Austin-Western Road Machinery Co., domestic sales organization of Austin Mfg. Co., Chicago, and Western Wheeled Scraper Co., Aurora, Ill., will handle industrial sales and service of Cletrac crawler tractors in the Middle West, South and Southeast.

Midvale Co., Nicetown, Philadelphia, has removed its Chicago office from McCormick Building to 627 Railway Exchange Building.

Parkett Machinery Division, Austin-Hastings Co., Inc., 226 Binney Street, Cambridge, Mass., has been organized to deal in new and rebuilt machinery, specializing in equipment for machine, production, plate, boiler, pipe, structural and sheet metal shops. Division is under management of Arthur B. Kettle and Frank A. Parker.

Robins Conveying Belt Co., 15 Park Row, New York, has opened new sales offices at Cleveland, in charge of Robert Wisely, 229 Rockefeller Building; Detroit, in charge of M. S. Lambert, 16170 LaSalle Boulevard; St. Louis, in charge of H. J. Martini, 7146 Dartmouth Avenue, and at Charleston, W. Va., in charge of R. U. Jackson, 905 Edgewood Avenue. Branch offices are also maintained in Pittsburgh, Philadelphia and Boston.

General Cable Corpn., New York, has been licensed by the Thiokol Corpn., Yardville, N. J., to manufacture and market a cable, the jacket of which is claimed to embody advantages of rubber and which is resistant to chemical action, fatigue, sunlight, oil, vibration and corona.

Charles H. Marshall, until recently a member of the technical staff of the Bell Telephone Laboratory, Inc., has joined the staff of Lucius Pitkin, Inc., consulting chemist and metallurgist, as materials engineer. Prior to his service at the Bell laboratories, Mr. Marshall had been in charge of the physical and mechanical laboratories of the Westinghouse Electric & Mfg. Co.

Revere Copper & Brass, Inc., New York, has opened a sales office at 1615 Russ Building, San Francisco, in charge of R. H. Binns, Jr.

Columbus McKinnon Chain Corpn., has removed its fire welding operations from Columbus, Ohio, to Tonawanda, N. Y.

Diamond Chain & Mfg. Co., Indianapolis, has appointed Puget Sound Machinery Depot as its representative in Oregon and Washington, and Joseph D. Christian Engineers and Horsford Brothers Co., both of San Francisco, as engineering representatives and industrial distributers respectively for northern California. The Diamond Chain company is represented in the Los Angeles territory by Goddard Jackson Co.